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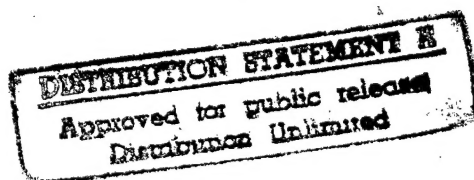
JPRS 83777

28 June 1983

USSR Report

AGRICULTURE

No. 1387



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MAJOR CROP PROGRESS AND WEATHER REPORTING

ADVANTAGES OF COLLECTIVE CONTRACT OPERATIONS FOR RICE PRODUCTION STRESSED

Moscow SEL'SKAYA ZHIZN' in Russian 8 May 83 p 1

Article by Yu. Semenenko, Krasnodar Kray: "Contract For the Rice Check Plots"

Excerpt The Kuban' rice growers are competing to sell 606,000 tons of grain to the state during the third year of the five-year plan.

Each year the weather produces new surprises for the farmers. Those individuals win out who apply themselves to the land in a thrifty manner and who perform their work in a prudent, creative and intelligent manner. These are precisely the qualities possessed by 1st class rice growers and they are typical of the mechanized teams at the Rossiya Kolkhoz, which has one of the largest rice fields in the Kuban. And a collective contract which has been introduced into operations at the kolkhoz is helping to sharpen their expertise, strengthen their determination and develop tactical flexibility.

This progressive form for wages and organization has been employed here for a number of years. It has proved its worth in all respects. Following the example of the Krasnoarmeyskiy Sovkhoz, in recent years the job contract plus bonus wage system with periodic advances has been supplemented by a number of truly important conditions which have served to heighten the interest of the rice growers in the final results of their labor and they have promoted continuous growth in the expertise of the personnel. They have been assigned land and equipment and conditions have been established which make it possible for each rice grower to master the profession of machine operator and for encouraging highly productive work by the personnel.

This year, with its unusually early spring, has confronted the machine operators with a serious test. And the rice growers of the leading kolkhoz in Krasnoarmeyskiy Rayon passed this test with honors, even though individual leaders and specialists were inclined to accelerate their sowing operations. They advanced the following arguments: unprecedented high degree of readiness of the hydraulic engineering installations, canals, machines and mechanisms and also the summer heat, both factors of which are of tremendous importance for rice. But at the same time such weather prompts the weeds to develop twice as fast. How can this be?

"We consulted with the rice growers. They are the masters of the check plots and, in addition to ourselves, are responsible for the harvest" stated the chairman of the kolkhoz V.I. Cherushev.

The machine operators, after weighing all of the pros and cons, resolved as follows: to carry out the sowing work with no delays and at the same time in not too much haste. Rather it should be carried out in a very thorough manner and with all of the agricultural methods being employed. Replowing, which is simply indispensable in the campaign against the evil enemy of rice -- root-reeds -- was carried out on a larger area and in a better manner than in the past, use was made on an extensive scale of highly effective contact herbicides and all seed was treated with microelements which stimulated the germination of the grain and raise the resistance against diseases. In addition, attempts were made to apply fertilizers and herbicides using mainly the ground method. Certainly the tempo of this work was lower than that when use was made of the aviation method, but on the other hand the quality was higher and there were fewer losses in the chemical preparations.

During April and May, we were able to visit many farms in the "rice belt" of the Kuban in Krasnoarmeyskiy, Slavyanskiy, Abinskiy, Kalininskiy and some other rayons. And everywhere one sensed a highly spirited attitude on the part of the rice growers and a desire to overcome those shortcomings in organization and agricultural practice which in recent years have brought about a sharp reduction in the productivity of an irrigated hectare. Crop rotation plans which necessarily include alfalfa and reclaimed fields (they presently constitute one third of the rice systems) are being revived in a consistent manner and improvements are being carried out in the tilling of the soil and in the reclamative status of the fields.

This year, this valuable groat crop will occupy 172,500 hectares throughout the kray -- 66 percent of the rice systems. And the entire area and also other fields included in the rice crop rotation plans have been assigned to mechanized contractual teams. As is usually the case, their formation at the kolkhozes and sovkhoses involves a great amount of thought and attention being given to the qualifications and psychological compatibility of the personnel and to expanding the democratic rights of the collectives. For example, at the Kuban' Kolkhoz in Slavyanskiy Rayon, the teams themselves decided who would work in each one of them. And such trust imposes a high level of responsibility.

"A collective is the best teacher. It does not tolerate any deviations from the technological charts, shirking of duties or a poor attitude towards the work" commented the chairman of the kolkhoz V.V. Simonenko, while citing an entire series of convincing examples in this regard.

Similar to other farms throughout the kray, all of the teams here operate on the basis of bi-lateral collective contracts in which the obligations of both the machine operators and the kolkhoz administration are taken into account. It bears mentioning that when these conditions are thoroughly observed by both sides, the fulfillment of the obligations is guaranteed.

In those areas where serious attention is given to the formation of the teams, the teams tend to become true masters of the rice fields. And it is by no

means an accident that the work rates are presently higher than ever before. This valuable crop has already been sown on more than 140,000 hectares, or four times more than the area for this same date last year. The applications of fertilizers and herbicides and the flooding of the check plots are being carried out in an organized manner and the quality of this work is higher than average. Unfortunately, this is not the case in all areas. The work is being carried out in an inexcusably slow manner on farms in Adyge Autonomous Oblast. Here a portion of the equipment is lying idle. And at the Adygeyskiy Sovkhoz in Teuchezhskiy Rayon, for example, the soil is not being cultivated in keeping with the agrotechnical requirements. This can lead to a shortfall in the harvest.

This year the Kuban rice growers have vowed to sell 606,000 tons of "white grain" to the state. The achieving of this goal is a matter of honor for the kolkhoz, sovkhoz and irrigation system workers -- all those who in some way are associated with the cultivation of rice.

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CSO: 1824/361

MAJOR CROP PROGRESS AND WEATHER REPORTING

HAYING OPERATIONS IN KRASNODAR KRAY

Moscow SOVETSKAYA ROSSIYA in Russian 9 May 83 p 1

/Article by V. Mokrotovarov, Krasnodar Kray: "The Green Harvest"/

/Text/ The wind moved with difficulty in the form of a wave over the green fields. The machine operators and feed procurement specialists at the Rossiya Kolkhoz in Ust'-Labinskiy Rayon commenced their work while the dew was still on the grass. The production line is operating in an efficient manner. A mowing machine lays out the mown alfalfa in windrows. It is followed by a windrow pick-up which loads the grass into a large field wagon. It is subsequently routed to drying units.

The sowing operations at the farm commenced earlier than usual. The first cutting of alfalfa must be carried out on 900 hectares and 120 tons of grass meal and 900 tons of hay procured.

"The feed obtained from an early cutting is very nutritious" stated machine operator V.T. Kirillov, "A good yield is at hand and now everything is dependent upon us and upon how well we work. The decision was made to complete the haying work in just 3-4 days. There is a twofold advantage: the quality of the feed will be higher and the grass will begin to sprout much more rapidly."

The first thousands tons of grass meal obtained in the rayon has already been shipped to the storehouses. Concern for the feed produces great advantages. In Ust'-Labe, somewhat earlier than in past years, they began obtaining 10 kilograms of milk from each cow.

Practically all of the farms in the Kuban have commenced their green harvest operations. Once again the initial results confirm the fact that success is achieved in those areas where the leaders and specialists display timely concern for the repair of equipment, where teams and detachments are created and where efficient operating plans are prepared for the feed fields. Approximately 1,500 specialized teams, all of which are adequately supplied with equipment, have joined in the feed procurement work.

"Last year the successful wintering of the livestock in the Kuban region was largely the result of the fact that the farms had been adequately supplied

with rich feed. The average milk yield for the kray surpasses those for past years by almost 2 kilograms daily" stated the chief of the Department of Feed Production of the Agricultural Administration of the kray executive committee O.A. Lishchenovskiy.

The mowing of alfalfa is being carried out during the best periods on farms in the Kuban . The green harvest is increasing in tempo with each passing day.

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MAJOR CROP PROGRESS AND WEATHER REPORTING

BRIEFS

CORN SOWINGS INCREASED--Krasnodar--The mass sowing of corn has commenced in the Kuban. The farmers have moved hundreds of sowing complexes out onto the fields. In the overall structure of the kray's grain crops, corn usually occupies more than 10 percent of the arable land. This spring, in order to offset a shortfall in grain caused by the loss of a portion of the winter crops, the decision was made to increase the corn sowings to one half million hectares. This is one fourth of the spring fields. The plantations of "Chudesnitsa," being cultivated under irrigation conditions, are being expanded by almost twofold. /Text/ /Moscow IZVESTIYA in Russian 18 Apr 83 p 1/ 7026

200,000 HECTARES OF RICE--Krasnodar--Water from the Krasnodar Reservoir was delivered to check plots located on the bottom land of the Kuban' River. This year the kray's rice sowings will occupy approximately 200,000 hectares. More than 2 billion cubic meters of moisture have accumulated in the Kuban' Sea. Its thrifty consumption is controlled with the aid of an EVM /electronic computer/. /Text/ /Moscow SOVETSKAYA ROSSIYA in Russian 26 Apr 83 p 1/ 7026

SPRING CROP SOWING COMPLETED--Krasnodar, 12 May--The Kuban farmers have completed sowing their spring crops. Today the sowing units abandoned the fields in the foothills of the Caucasus Range and the rice check plots in the Azov Sea region. Almost two million hectares of land are occupied by grain, pulse and forage crops, sugar beets, sunflowers, corn and rice. The sowing was carried out during scientifically sound periods and in will cultivated soil. In order to prevent a shortfall of grain, corn has been sown on fields where winter crops perished. The crops are being tended by more than 1,000 non-schedule teams and detachments. Special attention is being given to the winter grain crops. A top dressing is being applied to wheat on tracts allocated for obtaining grain of the highest quality. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 13 May 83 p 1/ 7026

HAYING OPERATIONS COMMENCE--Krasnodar--The harvesting machines have been moved out onto the Kuban meadows -- the mowing of sown grasses has commenced. Haying operations are also being carried out on natural grasslands. Vitamin grass meal is being produced from various types of grasses and haylage and early silage are being placed in storage. /Text/ /Moscow SOVETSKAYA ROSSIYA in Russian 6 May 83 p 1/ 7026

KUBAN GRAIN CROPS--Krasnodar--The Kuban grain crops are increasing in strength. The winter barley has already commenced forming ears and the wheat is just now beginning to cast off its ears. At the present time, an important stage is at hand in the campaign to obtain a fine harvest -- the application of the first top dressing of mineral fertilizer has commenced on the tracts set aside for strong grain. The kray's farmers plan to sell more than 90 percent of the strong and valuable grain harvest to the state. [Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 18 May 83 p 1/ 7026

FIRST MILLION HECTARES--The Kuban farmers completed sowing their first million hectares of spring crops. More than one thousand mechanized teams and detachments are working on the basis of collective agreements. [Text/ /Moscow EKONOMICHESKAYA GAZETA in Russian No 17, Apr 83 p 4/ 7026

EAGLES ATTACK SHEEP--Pirkuli Sakhadov, a shepherd of the Kolkhoz imeni Sverdlov, has had to wage an unusual battle in one of the canyons of the Kopet-Daga reservation. His herd was attacked by a huge flock of karagusha eagles. More than 50 of the predatory birds carried out a bold and organized attack. Neither shouts nor the shepherd's crook (posokh-tayak) stopped them. It is uncertain how this fight might have turned out--several sheep were injured, and Sakhadov's strength was nearly exhausted--if A. Serkhenov, a driver who was passing by not far away, had not come to his aid. The noise of the engine frightened the birds in their merciless attack. The attack of eagles on sheep and other large animals is an extremely rare phenomenon. In the opinion of ornithologists, the reason for such an aggressive behavior of the birds might be difficulties in finding food in the autumn. There are fewer snakes and rodents in the foothills. The young of wild animals have become stronger--they get away. The easiest prey for the eagles are the sheep tended by only one man. Hunger has made them bold, and the eagles attacked in a rush.... [By O. Kvyatkovskiy] [Text] [Moscow TRUD in Russian 22 Oct 82 p 4] 7045

TUSSR GRAIN CROP--The autumn-winter top dressing of grain has been completed in Turkmenistan. Water is being delivered to the fields. This makes the fertilizer more effective. The barley and wheat have become strong and have entered the tillering stage. About 90,000 hectares--more than last year--have been planted to winter cereal grains in the republic. The high-yield barley varieties "sholplan" and "altyn-dan" have been planted on extensive areas for the first time. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 21 Dec 82 p 1] 7045

MANURE APPLICATION--The warm days of spring have come, and farmworkers in the oblast have gotten work under way on a broad scale to prepare the fields for the future crop. More than 110 mixed mechanized soil conditioning teams have been preparing and hauling rotted manure to the fields in two shifts. In Kaakhinskiy, Gyaurskiy, Ashkhabadskiy and Geok-Tepinskiy Rayons a progressive system of applying fertilizer is being introduced successfully. For example, all the area to be planted on the Sovkhoz "Leninizm Yely" has been divided up into various sections. Every year each of them in turn receives 40 tons or more of organic fertilizer per hectare. This procedure for applying fertilizer made it possible last year to harvest more than 37 quintals of fine-fiber cotton per hectare. [By S. Kim] [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 22 Feb 83 p 1] 7045

TUSSR CROP PLANTING--As of 21 March 30,400 hectares of alfalfa had been sown on kolkhozes and sovkhoses and interfarm enterprises, which is nearly 57 percent of the plan. Farmworkers in Ashkhabad Oblast, who have fulfilled the plan for planting perennial grasses, are the leaders. On the farms of Mary Oblast new alfalfa seedlings have been established on 11,600 hectares, while the plan calls for 17,000. The farms of Chardzhou Oblast are lagging behind in the planting. Its plan has been fulfilled at 24 percent. The farms in Tashauz Oblast have the same performance indicator. The planting of corn for grain is going at an extremely low pace. So far 4,100 of 39,090 hectares have been planted. The farms of Chardzhou and Mary Oblasts are lagging behind particularly. Irrigation of alfalfa fields has been completed in past years on the farms of Ashkhabad Oblast. Harrowing and disking of perennial grasses are also coming to an end. A large amount of work has been done in alfalfa fields in Mary and Chardzhou Oblasts. In Tashauz Oblast harrowing and disking is being finished, and the farms have just begun irrigation. [Text] [Ashkhabad TURKMENSKAYA ISKRA in Russian 25 Mar 83 p 1] 7045

KOPET-DAGA GRAIN--In the Kopet-Daga Valley, which with the arrival of water by the Kara Kum Canal has become Turkmenia's principal granary, the graingrowers have set up to tend the winter cereal grains. With airplanes and equipment on the ground they are already finishing the second top dressing and irrigation of the crops, and the kolkhozes "Sovet Turkmenistany" in Gyaurskiy Rayon, "Sotsializm" and "40 Let TSSR" in Ashkhabadskiy Rayon, and the Kolkhoz imeni Lenin in Kaakhkinskiy Rayon are doing the third combined cultivation of the fields. The favorable weather conditions and the timely and competent performance of spring cultural measures have speeded up the growth of the grain crops, which everywhere have entered into the phase of full-fledged tillering. The advanced farms are now counting on threshing 30-35 quintals of wheat and barley per hectare. [Text] [Moscow SEL'SKAYA ZHIZN' in Russian 10 Mar 83 p 1] 7045

TUSSR CROP PLAN--Winter is a crucial time in the fields and in livestock operations. The republic's farmworkers are full of determination to lay a sound foundation for the harvest of cotton, vegetables, melons and forage crops, and they are tending winter crops, gardens and vineyards. Animal husbandrymen are doing everything to ensure high productivity of the livestock and to get through the winter season successfully. The plowing for spring crops has been done on 502,000 hectares. This is 87,000 more than were plowed by this date last year. But still this is no occasion for self-satisfaction. The plowing for cotton has not been completed by the farms in Ashkhabad, Mary and Tashauz Oblasts. Other winter operations are being done extremely slowly--grading, application of herbicides, digging of irrigation ditches, and irrigation for leaching purposes. A total of 40 percent of the area has been graded. This work was done particularly poorly in the Mary and Tashauz Oblasts. Full use is not being made of such an important factor in increasing the yield as returning organic matter to the soil. As in the past, they are applying between 1.5 and 2 tons of manures per hectare in Mary Oblast. The target for application of this type of fertilizer is not being fulfilled in the republic. The extremely low pace of leaching saline soils is causing particular worry. About 200,00 hectares have been prepared for receiving the water. But so far, water has been received only by 70,000 hectares of the prepared area, and irrigation is proceeding extremely slowly on the farms of the Maryyskaya

Oblast. Time does not wait. A recurrence of last year's errors, when because of the protracted winter irrigation saline soils were being leached on many farms at the same time when irrigation was being done in advance of planting, must not be permitted. [Excerpts] [Ashkhabad TURKMENSKAYA ISKRA in Russian 16 Jan 83 p 1] 7045

DESERT MUSHROOMS--Durdy Khudayberdyev, an inveterate mushroomgrower, treated his comrades, builders of the Zeidskoye Reservoir in Turkmenistan, to grilled champignons. He has harvested about 30 kg of mushrooms on the banks of the Kara Kum Canal. The desert is now unusually generous with its mushrooms. Whatever kind you like: truffles, russules, milk mushrooms.... After the abundant rains which have poured down on the Kara Kum, the mushrooms grow as if fed with yeast. [Text] [Moscow TRUD in Russian 17 Apr 83 p 4] 7045

CSO: 1824/326

LIVESTOCK

PROSPECTS FOR BREEDING DAIRY CATTLE ON INDUSTRIAL BASIS

Moscow SEL'SKAYA ZHIZN' in Russian 13 May 83 p 2

Article by N. Dmitriyev, Academician at All-Union Academy of Agricultural Sciences imeni V.I. Lenin and director of All-Union Scientific Research Institute of Breeding and Genetics for Agricultural Animals, Pushkin, Leningrad Oblast: "For Dairy Complexes"/

Text Purposeful breeding work makes it possible to increase sharply the productivity of livestock under the conditions of large-scale industrial production.

The conversion over to intensive methods for animal husbandry is especially complicated in dairy cattle husbandry. The animals to be used for large-scale mechanized farms and complexes must be distinguished by resistance to stresses, furnish milk easily and rapidly at highly productive milking sites, retain their reproductive functions and have strong constitutions and calm and steady temperaments. However, by no means do all of our strains meet these requirements. On the other hand, however, groups of cows can be singled out in each of these strains which are fully adaptable for maintenance under industrial conditions. I have in mind mainly the black-variegated cattle.

The officials on many farms throughout the country have become convinced that domestic black-variegated cattle, in terms of their genetic potential, are in no way inferior to foreign strains. In 1982, more than 6,300 kilograms were obtained from each of 1,050 cows at the Petrovskiy State Breeding Plant, with a figure close to this level being achieved at the Lesnoye State Breeding Plant. In this same Leningrad Oblast, an average of 4,900 kilograms of milk per cow was obtained at an inter-rayon association for pedigree sovkhoses and at the Detskosel'skoye Specialized Association. The productivity of cows at a breeding plant at the Kolkhoz imeni Lenin in Tula Oblast and at the Zarya Kommunizma State Breeding Plant in Moscow Oblast was 5,200 and 5,300 kilograms respectively.

Many examples can be drawn from the arsenal of science and practical experience which serve to place the breeding-genetic parameters of the livestock at the same level for the requirements for an industrial technology and also to create the conditions for industrial production which will stimulate their high productivity. For the formation of industrial herds throughout the country,

use is being made of pure-bred breeding methods in the planned selection and breeding of livestock. It bears emphasizing that the creation of populations of animals which are well adapted for industrial maintenance is possible only if this technology is employed for one generation after another.

Fine results were obtained in this regard by scientists at the All-Union Scientific-Research Institute of Breeding and Genetics for Agricultural Animals, where the coordination of breeding work with black-variegated cattle was organized. The structure of the breeding center includes nine laboratories and six support stations. There are 30 highly productive herds at the base farms, where intense studies have been carried out for several years now. These studies are aimed at developing the theory and practice for the breeding of dairy cattle and also the methods for breeding highly productive strains, herds, lines, families and highly valuable pedigree animals which satisfy fully the requirements for the industrial technology. For solving this task, use is being made of the achievements of genetics, physiology, biochemistry, mathematical methods and electronic computers.

For example, one method which is in widespread use for the purpose of creating highly productive herds for mechanized farms and complexes is that of pure-bred breeding. Here progress is achieved almost entirely as a result of the use of improvement-bulls which are valued highly for the quality of their offspring. But the most rapid method for breeding dairy cattle which meet the requirements for the industrial technology is that of using the gene-fund for the best international strains for inter-strain crossings. Here, as is well known, use is made of the phenomenon of heterosis, that is, improvements in vitality, early maturity and productivity with reduced expenditures of feed. Studies have shown that Holstein-Friesian cattle, which are genetically related to black-variegated cattle, are distinguished by especially high potential productivity.

A detailed evaluation of the results of crossings carried out by the All-Union Scientific Research Institute of Breeding and Genetics for Agricultural Animals, at dairy complexes of the sovkhoses Lensovetovskiy, Mginskiy, Ushaki, Agrotekhnik, Volosovskiy and the Lesnoye Breeding Plant in Leningrad Oblast, at the Prozhektor Sovkhoz in Novgorod Oblast and on a number of other farms in Moldavia, convincingly revealed that such crossings are directly dependent upon the level of feeding and the quality of the animals selected for the crossings. At the Lensovetovskiy Sovkhoz, for example, at a dairy complex having an average productivity for pure-bred black-variegated first heifers of 3,605 kilograms, the increase among daughters of Holstein-Friesian bulls was 358 kilograms of milk. An even greater yield -- more than 600 kilograms -- was realized in the milk yields of cows undergoing tethered maintenance (4,004 and 4,635 kilograms). And at the Lesnoye Sovkhoz, against a high feeding level, an increase of 1,203 kilograms was achieved (5,197 and 6,400). In all instances, improvements were realized among the hybrid cows in the shape of the udders and in the release speed for the milk.

At the same time, although the productivity of pure-bred animals during the first lactation turned out to be less than 3,000 kilograms of milk owing to a shortage of feed, nevertheless practically no difference was observed in the case of half-breed daughters of Holstein-Friesian bulls. And at the Prozhektor

Sovkhoz in Novgorod Oblast, where the milk yield for the herd was less than 2,500 kilograms, the daughters of Holstein-Friesian fathers furnished even less milk. In other words, on farms where the annual ration for cows is less than 3,500 feed units the crossing of black-variegated cows with Holstein-Friesian fulls lowers the economic indicators.

However, if there is a certainty that 3-5 years from now these farms will have biologically full-value rations (5,000-6,000 feed units annually per cow), then more extensive use can be made of crossings with Holstein Friesian cows or other strains. This will make it possible for the specialized farms engaged in raising replacement young stock to supply the farms with first heifers who have completed their lactation period, as some specialists have proposed. In the case of large dairy complexes and breeding farms, a closed cycle is more acceptable -- with their own farms for the raising of young stock and capable of fully ensuring replacements for the herd.

At the same time, persistent research work must be continued aimed at finding the optimum industrial technology for each zone. The concentration of animal husbandry operations at complexes is making it possible to solve better the many problems associated with genetic improvement of the herd. The standardization of the feeding and maintenance conditions for the animals is raising the accuracy of their breeding evaluation and it is making it possible to carry out on a more extensive scale the individual pedigree selection and checking of the genetic value of bulls and to supply the farms with progeny from one or several sires. This will ensure the best standardization for the animals themselves. In this regard, it is our opinion that the time is at hand for devoting thought to creating pedigree herds at industrial complexes. But whereas standardization is required for the selection of animals at complexes, at breeding farms the selection must be carried out by strengthening their genetic diversity. This will make it possible to uncover and select the best variants, to reinforce individual qualities and to propagate such animals under the conditions of an industrial technology.

Taking into account the numbers of livestock and the requirements for culling out animals at the complexes, greater importance is being attached to testing first heifers for the level of their milk yields and other technological traits. At the same time, a solution is being found for one important task associated with extending the operational period of dairy cows under the conditions of an industrial technology. The selection of the best first heifers according to milk yield, if only for one half of their overall number, leads to an increase of 15-20 percent in the production of milk. First heifers and also older cows that furnish 30 percent less milk than the average for the herd should, in the interests of the work, be removed from the herd and replaced by new and more productive animals.

In all of the breeding programs, the animals should naturally be selected based upon their resistance to diseases. It has already been proven that over a period of 10 years breeding carried out in this direction in dairy cattle husbandry raises the effectiveness of veterinary measures by twofold and reduces by one half the number of animals requiring veterinary assistance.

It goes without saying that the breeding of animals in pedigree herds should be carried out under conditions close to those found at industrial complexes.

At the same time, industrial production must take into account to a greater extent the requirements for individual zootechnical work carried out with the animals. Only by bringing together the "two principles" of dairy cattle husbandry -- attentive and thrifty attitude towards the animals in connection with flow-line production operations on the one hand and all-round mechanization and automation on the other -- will it be possible to achieve consistent improvements in the productivity of the herd.

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REGIONAL DEVELOPMENT

MEASURES TO IMPROVE QUALITY OF GRAIN, MILK, MEAT PRODUCTION IN NORTH KAZAKHSTAN

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[Article by Candidate of Economic Sciences Kamidolla Iskakovich Iskakov, section head at the Virginlands Affiliate of the Kazakh Scientific Research Institute for the Economics and Organization of Agriculture, and Renat Salikhovich Ibatullin, senior science associate of the Virginlands Affiliate of the same institute: "Improving the Quality of Agricultural Product on the Farms of Northern Kazakhstan"]

[Text] A systematic improvement in product quality is an essential demand for economic development and increasing the efficiency of sovkhoz production. The importance of efficiency and quality is growing in the new five-year plan. The "Basic Directions in the Economic and Social Development of the USSR for 1981-1985 and for the Period Up to 1990" state: "To significantly improve the quality of all types of produced products, to expand and renew the product assortment in accord with the present-day demands of national economic development and scientific-technical progress as well as the growing needs of the population. To constantly increase the proportional amount of superior quality product in the total output volume. To actively introduce comprehensive product quality control systems" ("Materialy XXVI s"yezda KPSS" [Materials of the 26th CPSU Congress], Moscow, 1981, p 141).

In recent years, economic and organizational measures have been adopted contributing to the increased amount of gross product and to its improved quality. Purchasing prices have been increased significantly and better state standards have been introduced. This has told favorably on increasing the output of high quality products.

The research conducted in Northern Kazakhstan has shown that a number of measures must be worked out and introduced to further improve the quality of the agricultural products produced here.

Wheat of the strong and durum varieties is the chief wealth of the virginland regions in Northern Kazakhstan. Over 88 percent of the republic procurements of strong wheat and 79 percent of the Union ones come from this region.

The volume of strong wheat purchases for the sovkhozes of Northern Kazakhstan as an average for 1971-1975 was 32.9 percent of the total purchases and in 1976-1980, some 47.1 percent. A significant portion of the market grain did not meet

the requirements of the state standard set for strong wheat. Refraction averaged 4.1 percent in 1971-1975 and 2.9 percent in 1976-1980. This equaled losses of, respectively, 308,100 and 261,000 tons of market grain. All of this reduced the level of product quality and production profitability.

As a whole for Northern Kazakhstan, 19.9 percent of the profitability from wheat production was obtained by its rather high quality (Table 1). Only on the sovkhozes of Pavlodar Oblast was the wheat quality indicator negative. This was explained by the fact that in the oblast the purchases of strong and durum varieties were only 7.3 percent while as a whole for Northern Kazakhstan the figure was 50.9 percent.

Table 1

Quality Level of Sold Wheat and Profitability of Its Production in Northern Kazakhstan as an Average for 1976-1980, %

Oblasts	Quality Level*	Profitability	Including for Product Quality
Kokchetav	22.4	55.9	14.1
Kustanay	37.4	79.3	24.6
Pavlodar	-2.1	43.3	-2.7
North Kazakhstan Oblast	13.4	59.9	8.9
Turgay	50.4	66.9	29.7
Tselinograd	37.1	79.4	24.4
Average for region	31.1	68.6	19.9

*The grain quality level was determined using the method of N. M. Makhnenko (see EKONOMIKA SEL'SKOGO KHOZYAYSTVA, No 1, 1980, pp 35-38).

Northern Kazakhstan is responsible for 45 percent of all types of meat purchases on the hoof, 52 percent of the milk and 18 percent of the wool.

Over the 5 years (1976-1980), in milk purchases the share of first quality more than doubled, from 12.5 percent in 1976 to 28.2 percent in 1980, while the share of milk refrigerated to 10° C increased, respectively, from 22.2 to 48.4 percent.

The largest amount of high quality milk was delivered by the farms of North Kazakhstan Oblast, with 60.8 percent and 33.3 percent of the milk first grade and 27.5 percent second grade. However, all the milk delivered by the farms of Northern Kazakhstan over the period from 1966 through 1980 was below the basic fat content. As a result, in 1966-1970, the farms were short 62,600 tons, in 1971-1975 some 144,600 tons and in 1976-1980, 193,300 tons. This was, respectively 1.5, 3.1 and 3.6 percent of the total sales. In just 1976-1980, the sovkhozes and kolkhozes of Northern Kazakhstan lost 9.3 million rubles a year from delivering milk with below the basic fat content.

The quality of beef has improved significantly. While in 1976, a little more than one-half of all the fattened head (51.9 percent) was superior quality, in 1980, the figure was already 76.8 percent. The share of lean cattle declined from 4 to 1 percent in the total amount of sales.

Over this period the live weight of one head of livestock sold to the state increased by an average of 69 kg. The greatest successes were achieved by the farms in Kustanay Oblast. In 1976-1980, they sold cattle with a total live weight of 390,700 tons, and here 86.6 percent of the cattle was of superior condition and only 1.1 percent lean. The live weight of each animal sold to the state in 1976 was 416 kg and in 1980, 434 kg.

There was an increase in the delivery to the state of young animals with a higher live weight. In 1976, of the total purchases 25.4 percent were such young animals and in 1980, already 49.6 percent. A surpayment of 35-50 percent of the purchase price was paid additionally for this. Thus, over the 4 years, the monetary surcharge for high quality young animals as a whole for the region rose by more than 2-fold, by almost 5-fold for Kustanay Oblast, 4.3-fold for Turgay Oblast, 7-fold in Tselinograd Oblast and 2.2-fold in Kokchetav Oblast.

At the same time, it is essential to point out that if all the below-grade cattle purchased in Northern Kazakhstan as an average for 1976-1980 had been sold with one-half in superior condition and one-half in medium condition, the farms would have received an additional 15.2 million rubles a year.

However, regardless of the fact that in the purchases as a whole there was an increase in the amount of high quality livestock products, sufficient attention is still not being given to the questions of improving the quality of the sold product. Thus, in Northern Kazakhstan, in 1976-1980, first grade milk was 19.4 percent of the total purchases and second grade was 20 percent; Turgay and Tselinograd Oblasts delivered respectively, 10.5 and 11.5 percent of first grade milk. Certain rayons over this period did not deliver a single quintal of quality milk and this led to losses of significant amounts of monetary income.

Using the method of N. M. Makhnenko, we calculated a general indicator for the existing level of milk and beef quality on the farms of Northern Kazakhstan as an average for 1976-1980 (Table 2).

The table's data confirm the interdependence of production profitability and the quality of the produced product: the higher the quality the higher also the profitability level.

In Northern Kazakhstan, the lowest level of milk quality is found on the sovkhoses of North Kazakhstan Oblast. At the same time, the share of high-grade milk sold to the state by the oblast's farms was 39.4 percent. Such a discrepancy between quality and grade is explained by the fact that the milk in North Kazakhstan Oblast has a low fat content (3.58 percent). As a consequence of this, a significant portion of the milk losses for Northern Kazakhstan due to the low fat content occurs from the sovkhoses of North Kazakhstan Oblast. The selling price of 1 quintal of milk in North Kazakhstan Oblast is also the lowest, some 22.42 rubles, while as an average for Northern Kazakhstan it is

Table 2

Quality Level of Procured Livestock Products and Profitability of Their Production on Northern Kazakhstan Sovkhozes in 1976-1980, %

Oblasts	Quality Level		Profitability Level	
	Milk	Beef	Milk	Beef
Kokchetav	-7.0	30.3	-11.6	-6.3
Kustanay	-2.7	56.2	1.6	14.5
Pavlodar	-2.2	31.7	-3.0	0.5
North Kazakhstan Oblast	-15.2	36.0	-10.6	2.5
Turgay	-10.5	32.2	-15.5	-10.5
Tselinograd	-7.4	45.3	-19.4	-11.2
Region average	-7.2	42.1	-8.2	0.6

24.97 rubles. Merely due to the lower milk costs, some 25.08 rubles (for Northern Kazakhstan this equals 27.22 rubles), the losses in North Kazakhstan Oblast are significantly less than in Turgay and Tselinograd Oblasts.

The highest quality level for the beef sold to the state has developed on the sovkhozes of Kustanay and Tselinograd Oblasts. However, here as well one can note a violation of the dependence of the profitability level upon the product quality level. Thus, on the sovkhozes of Tselinograd Oblast, with a quality level of 45.3 percent, beef production should seemingly be profitable. Actually it involves losses. This is due to the high cost of 1 quintal of beef, 190.88 rubles (for Northern Kazakhstan it is 165.93 rubles) and the low share of higher quality livestock in the total purchases or 64.6 percent (71.3 percent for Northern Kazakhstan). For this reason the surpayment obtained for product quality along with the receipts has not been sufficient to cover expenditures on its production.

An analysis made by us for the wheat quality indicators for the natural-economic zones of Northern Kazakhstan has shown their exceptional dependence upon the natural conditions. For example, in the first zone the protein content in the grain was 15 percent, gluten was 27 percent; in the second zone 16 and 28 percent; in the third zone 18 and 30 percent; in the fourth zone 18 and 31 percent and in the fifth zone 17 and 29 percent. The highest quality grain is produced under the conditions of the third and fourth zones, where the temperature total reaches 2,800-3,000° C and the average annual amount of precipitation is 250-300 mm. In the first and second zones the climate is cool and more humid, while in the fifth zone the average annual amount of precipitation is only 150 mm.

One of the most important farming procedures for increasing quality is to plant the crops after the best predecessors. Clear fallow is considered the best. Its employment helps the more intensive accumulation of protein in the grain. For example, according to the data for 1971-1975, on the Kolos, Rassvet,

Nikolayevskiy and Novo-Il'inovskiy Sovkhozes in Taranovskiy Rayon of Kustanay Oblast, in the Saratovskaya-24 wheat planted during the first year on clear fallow, the dry protein content was 1.9 percent more and the gluten content 0.8 percent more and in planting in the second year, respectively, 0.9 and 0.5 percent more. The area of clear fallow in Northern Kazakhstan is around 2 million hectares. However, the existing size of the fallow area makes it possible to develop crop rotations on 8 million hectares and this is 53.5 percent of the arable area.

The relatively low quality level of the wheat in relation to the yield is explainable by the insufficient supply of mineral elements for the plants. The phosphorus shortage is particularly felt. According to the data of the Northern Kazakhstan Agrochemical Laboratory, the application of superphosphate would increase the protein content up to 1 percent, the gluten up to 2.3 percent while the absolute grain weight would rise by 3.4 gms. At the same time, in 1971-1975, as an average for Northern Kazakhstan, mineral fertilizers were applied in insignificant doses (5-6 kg of active ingredient per hectare of plowed land and such a quantity does little to improve grain quality).

One of the important farming procedures for improving grain quality is to harvest the crop at the best time. The baking qualities of the grain improve as it matures almost to the point of full maturity. The overstanding of the wheat in the field, as a rule, reduces these qualities. For this reason the grain must be harvested in a minimum time. Unfortunately, in Northern Kazakhstan the picking up alone lasts 25 days. Considering the bad weather days and the use of the combines for dumping the harvest period varies from 40 to 50 days. Consequently, a further shortening of the harvest time will depend largely upon the supply of the farms with a combine fleet and its efficient use.

Among the measures to improve product quality is effective work to upgrade the breeding and productive qualities of the livestock in the desired direction and the introduction of high quality seed varieties.

Some 11 breeding farms and sovkhozes are concerned with improving the pure breed qualities of cattle in Northern Kazakhstan. In North Kazakhstan Oblast the basic cattle breed is red steppe which, as is known, is marked by a low fat content in the milk. For this reason the oblast is doing extensive work to develop a new type of dairy cattle using breeding bulls of the Angler [?Angeln], red Danish and red Estonian breeds in the aim of increasing the butter fat content. In comparison with 1975, in 1978 there was an increased number of artificially inseminated cows and heifers and a larger general number of highbred red steppe cattle. As a whole, the number of purebred cattle increased by almost double, from 10.4 to 19.6 percent.

On the kolkhozes in Kustanay Oblast, there are three breeding farms for meat cattle where work is being done to improve the productive qualities of meat cattle. For this reason it is no accident that the highest level of beef quality (56.2 percent) is found in this oblast. Good results have also been achieved by the farms of Kustanayskiy Rayon which in 1978 delivered cattle weighing 442 kg per head on the hoof, and 94 percent of the animals were of superior condition. For the increased-weight young animals, the rayon's farms received a surpayment totaling 4.5 million rubles. The Kazakhstanets Sovkhoz

from this rayon sold the state 1,145 head of cattle with a live weight of 462 kg per head, with 95 percent of the animals of superior condition. Of the total number of sold livestock, 82 percent of the head were young animals with increased live weight and for this the farm received 318,000 rubles in money surpayments. The greatest successes were achieved by the farms of Fedorovskiy Rayon which over the quarter of 1979 sold 9,249 head with a live weight of 510 kg per head and 98 percent of superior condition; the farms of Ordzhonikidzevskiy Rayon had figures, respectively, of 4,755 head each weighing 490 kg with 99 percent of superior condition. The Voronezhskiy and Korzhunkol'skiy Sovkhozes in Kustanayskiy Rayon delivered all the livestock in superior condition with a live weight of over 500 kg per head.

Breeding work to raise dairy cattle has been well organized also in Pavlodar Oblast. The oblast's farms deliver milk within the limit of the basic fat content or above. However, the number of existing breeding farms is far from being capable of providing highly productive purebred young animals to the farms of Northern Kazakhstan for improving the breeding qualities of the existing animals. This correspondingly impedes the carrying out of measures to improve the quality of livestock products.

Grain quality depends largely upon the condition of seed raising and the introduction of high quality regionized varieties. Seed quality in Northern Kazakhstan does not meet the requirements of a high class sowing standard and around 25-30 percent of the area is sown with poor quality and below standard seed. In our opinion, for continuously satisfying the needs of the farms for high quality seed it is essential to set up specialized interfarm seed raising associations in the rayons or zones.

One of the basic elements for improving the quality of livestock products is improved veterinary and sanitary work on the sovkhozes. On many sovkhozes, instances have been noted of poor treatment of the animals, the antiepisodic inoculations are not given promptly and the sick animals are not segregated from the healthy ones. As a result for Northern Kazakhstan, in 1976-1980, a significant amount of the purchased milk was obtained from sick cows. This is used by the state as ungraded milk. The sick animals are low producers. Thus, in 1979, on the Trudovoy Sovkhoz in Tselinograd Oblast, from the healthy group of cows 2,600 kg of milk per cow were obtained during the year, and this was 1.5-fold more than was produced on the other dairy farms of the same sovkhoz where there were sicknesses. The zooveterinary service of the sovkhozes should work out a range of sanitation and preventive measures to prevent the outbreak of illnesses and create optimum conditions for the sick animals to recover.

The organizing of veterinary stations on each sovkhoz is one of the progressive forms for preventing and treating illnesses. The experience of such stations in the southern and southeastern oblasts of the republic shows the improved organization of veterinary services for livestock raising on the farms. The effectiveness of the stations is confirmed by the recovery of 70-80 percent of the animals sent for treatment.

Many positive results have been achieved on the farms of Northern Kazakhstan. Thus, due to the sanitation measures carried out in Alekseyevskiy Rayon of Tselinograd Oblast, on the Sovkhoz imeni Dzhambul and Khleborob Sovkhoz, on

two dairy farms of the Uryupinskiy Sovkhoz and at the central farmsteads of the Novorybinskiy and Trudovoy Sovkhoz, the health of the herd has been improved.

Milk quality to a significant degree is influenced by the sanitation and hygienic rules for its production, processing, storage and marketing. Not all the farms are fenced, manure is scattered over the territory and the waste channels are not always properly utilized. Many farms do not observe elementary hygiene rules in milking. On the farms there often is no hot water. Due to the violating of the veterinary and sanitary conditions, the acidity of the milk is increased, its purity and bacterial contamination become worse. Merely due to increased acidity, a dairy returned 44 tons of milk in 1978 to Atbasarskiy Rayon. On the farms of Krasnoznamenskiy, Kurgal'dzhinskiy and Vishnevskiy Rayons, the freshly produced milk often stands idle for 1.5-2 hours without cooling and this sharply increases the acidity and bacterial contamination of the milk.

For improving the quality of agricultural products, it is essential to further improve the existing system of economic incentive. As the research results indicate, a large portion of the wheat purchased in our zone (over 70 percent) contains 28-31 percent raw gluten, and for this up to 1968 a 40-percent surpayment was paid while now it has been reduced to 30 percent. Moreover, according to the existing provisions, the amounts of the price additions, particularly for strong wheat, show sharp and unjustified fluctuations. An error in determining quality for the gluten content by just 1 percent reduces the total surpayment from 30 to 10 percent or from 50 to 30 percent. Because of this the agrarian economists feel it advisable to encourage the farms to increase strong wheat production by setting surpayments on the prices for soft wheat for each percent of increased gluten content in the grain.

The differentiating of purchasing prices considering quality indicators is an important incentive factor for improving product quality. However, the employed purchasing prices do not sufficiently consider the designated demands. Thus, the prices for beef have been set depending upon condition: the higher the condition the greater the payment. They have been set as the same both for carcasses of dairy animals and for carcasses of meat animals, and here the livestock breed is not considered. For example, animals of the Kazakh white-headed breed produces meat which in terms of taste qualities and biological value is superior to the meat of other breeds of animals. Higher quality meat is also found in the meat breed groups obtained by interbreed crossing. But these breed features are not considered in the purchase price. In addition, the meat-breed animals have a number of advantages over the dairy breeds of livestock. They are more rapidly maturing, they more efficiently pay for the feed in product, they possess high growth energy and produce a good slaughtering yield. The meat breeds have a higher capacity to accumulate valuable nutrients (protein and fat) in the organism. A so-called "marbled meat" is obtained and this is highly regarded and is in great demand among the consumers.

The absence of differentiated purchasing prices restrains the raising of the most valuable breeds and breed groups of meat livestock. Possibly, it would be advisable to put the meat breeds which are most valuable in terms of meat quality in a separate list and set a certain percentage surcharge on the purchase price for them.

In the system of economic measures aimed at improving product quality, material incentives for the workers are of particular significance. If with the existing economic incentive systems the farms receive a quality surpayment for all types of sold products, the workers are encouraged only partially for individual types of products. Thus, in producing milk the farm leaders have the right to pay bonuses to the farm workers amounting to up to 4.5 percent of the value of the milk for supplying first grade milk. In meat livestock raising, as an incentive for the workers, for each animal of superior quality, 2 kg of meat are given, that is, remuneration for product quality is done in a physical form and this cannot be accepted as a progressive form of incentive. In addition, the existing incentive system has been set only for condition of the animals and does not provide an additional payment for the weight of the animals, although the sovkhoz as a whole receives a 35-50 percent surcharge for heavy-weight livestock. This, in turn, requires the elaboration of a uniform progressive form of remuneration which would encourage the employees, specialists and leaders to systematically improve product quality.

In our opinion, in the aim of encouraging the agricultural workers to increase the output of high quality products, a portion of the additional receipts received by the farms for quality should be set aside to encourage the workers for all types of product produced by them. Here the total amount of the incentives should be set for all participants who determine the quality of the produced product in percent of basic wages, proportionally to the share of high quality product in the total sales volume.

Under the condition of introducing the proposed form of incentive, as an average for 1976-1980, the workers and specialists of Northern Kazakhstan could have received a surpayment for increasing wheat quality totaling 69.4 million rubles which is 6.6 percent of the total receipts; for meat 61.9 rubles or 14.6 percent; for milk 17.2 million rubles or 5.7 percent. Here the additional payment for quality should be made not once a year, but rather periodically over the year, depending upon the degree of selling the product to the state. Thus, the addition for milk quality should be paid after summing up the results for the month, for meat quality after the quarter and for grain quality after harvesting. This would encourage the workers more to produce and sell high quality products.

One of the areas of improving product quality is to improve the relationships between the farms and the procurement organizations. The Ukrainskiy Sovkhoz in Kustanay Oblast has done a good job of improving relations with the grain receiving facility. The farm has set up a special laboratory for determining grain quality and lab workers have been trained for this with space and the necessary equipment made available. The preparation of the grain for delivery starts here even before the beginning of threshing. The tests are run separately by the sovkhoz and the grain receiving facility. The sheaves are selected according to the testing or planting registration statements. Then a register of the gluten content is drawn up. The laboratory data are compared with the testing results of the laboratory at the grain-receiving facility. For the fields where there are significant discrepancies in the results, a second selection and testing are done together with the commission.

This analysis provides great help in forming the seed batches, in preserving the strong wheat grain and in preventing its mixing with lots of market grain which has not tested as strong or has a higher gluten content of better quality. The analysis makes it possible to draw up the grain delivery plan and to establish the sequence of shipping its individual lots.

Often one has witnessed livestock which has been delivered to a slaughterhouse stands idle for a long time waiting its turn to be accepted. As a result, the animals lose weight and the condition deteriorates. There also are animals which die. Thus, the painstaking effort and enormous material expenditures invested on raising and fattening the animals are scattered to the four winds due to the negligent attitude of the slaughterhouse workers.

A progressive form of relations has come into being in Karaganda Oblast. According to a previously drawn up contract and guarantee, a representative of the slaughterhouse phones the farm and sets the number of animals to be delivered. After the preliminary agreement, a column of cattle transports sets out. The condition and live weight of the lot of animals and one head are determined on the spot in the presence of specialists from both sides.

In Northern Kazakhstan, it is the practice to receive milk on the spot with the centralized delivery by specialized transport of the purchasers. The Suvorovskiy Sovkhoz in Tselinograd Oblast was one of the first to convert to centralized delivery by special transport. Even in 1976, the state received 99 percent of first grade milk and in 1977, 97 percent.

However, such a form of relations between the farms and purchasers is being slowly introduced in Northern Kazakhstan. Thus, in Kustanay Oblast, out of the 141 milk-producing farms, only 33 sovkhozes in 9 rayons of the oblast are ready fully for centralized delivery, but because of their location significant distances away and the lack of a sufficient amount of transport for shipping the milk, the enterprises of the oblast dairy association receive only from 10 sovkhozes where in 1978 the volume of transported milk was just 5.2 percent. Some 15 cattle transports carried 11,350 tons of livestock from the sovkhozes and kolkhozes of the oblast and this was 13.5 percent of the head transported in 1978. In Pavlodar Oblast, 23 out of the 115 farms have converted to centralized milk delivery while specialized motor transport carried livestock with a total live weight of 1,049 tons from 12 farms in the oblast.

The receiving of products on the spot with centralized delivery by the transport of the processing enterprises has also been held up due to the shortage of specialized motor transport. The Goskomsel'khoshtekhnika [State Committee for Agricultural Equipment] does not carry out the farms' requests. Thus, in 1977, the Tselinograd Production Association for the Dairy Industry submitted a request for 97 milk trucks, but only 37 were provided; in 1978, only 30 out of 104.

In the system for improving milk quality, an important factor is the organizing of milk units on the farms. The milk units can filter, purify, cool, pasteurize and carry out other procedures with the milk for ensuring the natural properties and improving the quality indicators of the milk. Due to the lack of these on the farms of Northern Kazakhstan in 1976-1980, only 42.3 percent of the

milk was delivered cooled to not more than 10° C. Particularly low are the amounts of cooled milk in the total milk purchases on the sovkhozes of Turgay, Pavlodar and Tselinograd Oblasts which, as an average for 1976-1980, were, respectively 13.5, 30 and 30 percent.

The construction of milk units has been held up by the insufficient supply of the dairy farms with refrigeration and production equipment. The requests of the sovkhozes and kolkhozes for equipment for the primary processing of milk have not been satisfied by the oblast Sel'khoztekhnika associations.

The converting to receiving the products directly on the farms and delivering them by specialized transport of the purchasers helps to organize the rhythmic operation of the dairies and slaughterhouses, it is advantageous for the farms and makes it possible to ship the products promptly. Such a form of procurement increases reciprocal responsibility for safeguarding the quality of the produced product.

In the area of quality control, the preparation of the product must be viewed as a particularly important problem. Improving quality control for agricultural products requires the establishing of a new independent sector designed to process agricultural products on an industrial basis, to store them and sell them to the state.

For forming the new sector, it is essential to set up industrial shops equipped with modern facilities for processing the milk, market grain, feed grain and seed stock as well as preparing grass meal, granules, concentrates and feed mixes. At first this can be made up by concentrating and unifying the available equipment such as mechanized threshing floors, warehouses, asphalted areas located in the divisions or brigades, the mechanized feed shops at the farms as well as the milk processing equipment, bringing all of this into a single whole.

A special laboratory must be set up for determining the quality of the agricultural products and the feed for livestock raising.

The Sovkhoz imeni 50-Letiya VLKSM in North Kazakhstan Oblast could serve as an example of such industrial shops to process crop products in Northern Kazakhstan. Here the quality of the delivered grain has been significantly improved due to organizing such a shop. Thus, while on the average for the Tenth Five-Year Plan the in-kind reductions for the sold grain were 3.3 percent, after organizing the processing shop on the sovkhoz, they began to receive an increase totaling 1-2 percent of the physical weight. Instead of annual withholdings for drying and cleaning totaling 28,500 rubles, they received a monetary payment of 21,300 rubles for bringing the grain up to basic condition and 915,100 rubles for strength. Here the profitability level for grain production doubled and reached 162.2 percent. With the organizing of the processing shop, it became possible to prepare balanced feed for the livestock and this made it possible to increase animal productiveness on the farms by 20-25 percent.

A similar industrial shop is operating also on the Yerkenshilikskiy Sovkhoz of Tselinograd Oblast. It has six storage capacities with a volume of 16,500 tons used to store the processed products. Due to the creation of the new shop, the farm has succeeded in preparing 6,300 quintals of concentrated feed with a value

of 7.84 rubles per quintal, some 7,800 quintals of vitamin-grass meal with a value of 2.63 rubles per quintal. As a result, the milk yield per cow has risen by 19 percent.

The new industrial shop designed to process the agricultural products will create conditions for the development of agroindustrial integration.

Thus, the carrying out of the listed measures undoubtedly will help the sovkhozes in Northern Kazakhstan to improve the quality of agricultural products, to complete the conversion of the economy to intensive development and more fully satisfy the needs of the population.

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AGRO-ECONOMICS AND ORGANIZATION

INITIAL RAPO OPERATIONS EVALUATED

Lithuanian Experience, Problems Discussed

Moscow SEL'SKAYA ZHIZN' in Russian 15 Apr 83 p 2

[Article by TASS correspondents I. Bagdanskis, Yu. Budris and R. Chesna from Lithuania: "Toward Smooth Interaction"]

[Text] The new management bodies for agriculture and related sectors, the RAPO [Rayon Agroindustrial Association], are taking their first steps. How have they started out in Lithuania and how are they actually carrying out the tasks posed by the Food Program and by the decisions of the May and November (1982) Plenums of the CPSU Central Committee? We discussed this question in Radvilishkiy Rayon.

This rayon, like Lithuania as a whole, is specialized in the production of dairy products and milk. Calculated per 100 hectares of farmland, last year they produced 700 quintals of milk and 170 quintals of meat. The cereal harvest was 38.4 quintals.

"Our possibilities have significantly increased," said the chairman of the RAPO Council, A. Chywas. "At present, the economic levers have been combined together for influencing both agricultural production itself as well as the sectors serving it. In addition to all the rayon's farms (and we have more than 30 or them), the RAPO includes the organizations involved in supply, the use of chemicals, land reclamation, construction, enterprises involved in the procurement and processing of products and a forestry enterprise...."

The comprehensiveness of the problems solved and the emphasis on the end product—this is a powerful reserve for improving management! Territorial and sectorial principles are combined. The rayon level has been significantly strengthened. At present, a majority of the questions related to economic activities can be solved on the spot, directly within the RAPO Council.

Here is an example of this. One of the immediate tasks at present is to successfully conclude the wintering of livestock. At a council session the question was urgently raised of increasing the productivity of the milk herd and

the weight increases of the cattle being fattened and the quality of livestock products. The uneven development level of the sector and its intensification to a significant degree has been determined by feed. As yet, there is not enough feed everywhere. Then the council member, the chairman of the Draugas (Comrade) Kolkhoz A. Malinauskas proposed that the above-norm feed stocks on some farms in the rayon be redistributed to others which particularly needed this. This was done upon the council's decision. Now the same Draugas Kolkhoz has turned over to the Grazhionis Sovkhoz 500 tons of silage and 60 tons of combined feed on the basis of interfarm payments. The other farms proceeded in a similar manner. The results were not long in coming as the milk yields as an average per cow during the first months of the year rose by more than 50 kg in comparison with the same period of last year. Incidentally, this rather high indicator to a significant degree has been achieved by increasing the yields on the lagging farms.

Initiative and entrepreneurship are becoming the guarantee for more successfully solving a number of other problems as well. The equipment could scarcely have been prepared so early for sowing on all the farms if an association spare parts supply had not been created. Previously these spare parts went unused on the "overstocked" farms while other farms sought them high and low. This year in the rayon for the first time there have been no difficulties in equipment repairs. RAPO control over the allocation of spare parts has fundamentally altered the situation. The question of supplying all the farms with first-class seed for spring crops and perennial grasses, above all pulses and clover, has been fully solved by mutual aid.

"During the first months of its activities, RAPO could not encompass the entire range of urgent problems," concluded the First Secretary of the Party Raykom N. Shidlauskas in our talk. "But a beginning, as you see, has been made. At present, the raykom is making an effort to create the necessary conditions for the work of the RAPO, for smoothly coordinating all its units and for showing initiative and independence."

In actuality, from now on, if the raykom bureau raises the question of the state of affairs in livestock raising or crop raising—be this the milk yield, the weight increases of the cattle or the field yields—not only the kolkhoz and sovkhov leaders, but also their partners report and are responsible for this to the party.

Particular importance has been given to introducing cost accounting on the kolkhozes and sovkhovs and to raising the responsibility of the personnel for more fully utilizing the internal reserves. Already last year the advanced farms began using a collective contract both in livestock raising and field work. The rural workers are counting on the aid of theoretical economists in improving this question.

"The RAPO actually need such help," we were told by the Director of the Lithuanian Scientific Research Institute for Agricultural Economics, Doctor of Economic Sciences V. Poshkus. "The basis for solving the arising problems has already been laid. The farms of Radvilishkiy Rayon, as in all the republics, have been classified in four economic groups for the differentiating of the additions to the purchasing prices. Consideration here has been given to the

natural and economic conditions of each farm. The RAPO Council should constantly consider this in the specific leadership of agriculture."

As is known, from 1983 the purchasing prices are to be raised for a number of crop and livestock products. The RAPO Council must determine how the received additional income is to be employed with maximum effectiveness. The institute's scientists will help it in this.

However, as in any new undertaking, problems arise. The activities of the party bodies and the Commission of the Presidium of the Lithuanian Council of Ministers on the Questions of the Agroindustrial Complex are aimed at solving them. A clearer solution is required to the question of the sources of funding for the personnel of the RAPO. The procedure for forming and utilizing the money of the centralized RAPO funds has not been completely established.

Voronezh Area Official Interviewed

Moscow SEL'SKAYA ZHIZN' in Russian 2 Apr 83 p 2

[Interview with N. T. Ternovykh, chairman of the Kantemirovskiy Rayon RAPO Council by SEL'SKAYA ZHIZN' Correspondent Ye. Petrakov: "Pooling the Efforts of the Partners"]

[Text] Every day the new management bodies in the rayons, the agroindustrial associations, are becoming more active. Positive experience has already been acquired in the close pooling of efforts in the kolkhozes and sovkhoses as well as the enterprises and organizations serving them. SEL'SKAYA ZHIZN' correspondent Ye. Petrakov spoke with the chairman of the RAPO Council N. T. Ternovykh on the first steps of the Kantemirovskiy RAPO.

[Question] How does the new management body strengthen the intersectorial ties and see to it that the partners of the kolkhozes and sovkhoses together with the crop raisers and livestock raisers be responsible for the end result?

[Answer] The first days of the work of our RAPO showed that the reorganization in the management of such a multisector economic organism as is the agroindustrial complex makes it possible to achieve a significantly greater effect in utilizing the reserves than was the case previously.

Judge for yourself: our association includes 61 enterprises, including 20 kolkhozes, 6 sovkhoses, an interfarm pig raising enterprise, a poultry incubator station, a poultry meat combine, an oil pressing plant, a cannery, 2 grain receiving stations, 2 beet stations as well as numerous organizations involved in serving the kolkhozes and sovkhoses such as the raysel'khoztekhnika [rayon farm equipment supply], raysel'khozkhimiya [rayon agricultural chemistry], various PMK [Mobile Mechanized Construction Columns], Sel'energy [Rural Power] and so forth. Prior to the start of the current year, they were all separate. Each had its own plan, its own concerns and most importantly different end goals. Organizationally, and particularly economically, it was impossible to coordinate the work of all these enterprises.

Previously, the following picture was typical. A brigade from the raysel'khoztekhnika arrived on a farm, the repairmen tinkered around the tractor, they changed the oil and left, demanding a statement that maintenance had been carried out. Soon after such "maintenance," the tractor broke down. It was again repaired, and again the farm paid money for this.

Now the manager of the raysel'khoztekhnika I. S. Degtyarev has become my deputy at the RAPO. He is personally responsible for the technical state of the machine-tractor fleet on the farms. The RAPO Council has ruled that there is a maintenance schedule and if a machine breaks down ahead of time after a regular maintenance, the raysel'khoztekhnika carries out the second repair at its own expense. The attitude toward the job immediately changed sharply with the brigades coming to the kolkhoz not in a rush to get back home. For each case of premature breakdown of an agricultural machine, the farm, the raysel'khoztekhnika and Gostekhnadzor [State Technical Inspectorate] determine the reason for the failure and then not only punish the guilty parties, but make them pay for the repairs.

Certain specialized repair enterprises are outside the rayon. Here as well poor quality repairs have frequently been made. It was difficult to achieve high quality work from them. Now we proceed as follows: a combine is returned from the repairs and the raysel'khoztekhnika immediately inspects the quality of repairs. If it has been done poorly, we return it for redoing. And if a poorly repaired combine is delivered back to the farm, our raysel'khoztekhnika is responsible for the quality of repairs and will do the work at its own expense.

This is just. Sel'khoztekhnika will more quickly find a common tongue with the enterprises which are part of its system and will bring pressure to bear on the negligent executors through the leadership of the oblast Sel'khoztekhnika.

Or take our relations with Sel'khozkhimiya [Agricultural Chemistry]. Previously, it endeavored to defend a reduced plan for the oblast organizations. And it was able to do this because the oblast did not know the true capabilities of the enterprise. For example, the combating of ravine growth was reduced to a minimum and we could not accept this. We accepted a plan proceeding from the available equipment in the raysel'khozkhimiya. We insisted that a larger amount of work be done and allocated additional bulldozers.

The same thing applies to the plans for transporting organic fertilizers to the fields. The RAPO Council insisted that a taut plan be adopted. The raysel'khozkhimiya was to coordinate its efforts with the farms. For example, Sel'khozkhimiya uses its own transport while the tractor belongs to the kolkhoz. Or the reverse. In these instances, much more can be done than before.

We have long been bothered by the question of storing the products grown on the farms. Many vegetables and fruits are lost due to the fact that the cannery did not accept them, referring to the plan set by the oblast. In using one-half of its capacity, they nevertheless requested that the plan be reduced. The oblpotrebsoyuz [oblast consumer union] which ran the plant agreed with this line of argument as supposedly the boiler was operating poorly. The RAPO Council did not accept this. The plan should not be reduced, but increased. All right,

the enterprise must be reconstructed and the rayon would help do this. On the other hand, the cannery would process as much product as we needed.

[Question] What specific measures has the RAPO Council undertaken to increase the efficiency of sovkhoz and kolkhoz production?

[Answer] At present, in the rayon the field work is being carried out under difficult conditions. Due to the resowing of the winter crops, the total amount of work has significantly increased. For this reason, the clear organization of field work requires particular attention. I am confident that we will be aided by the interaction and mutual aid of all the association's members.

In the rayon per working-age person there are 15 hectares of arable land. For this reason it is very important to effectively allocate those labor resources which we have. At its session, the RAPO Council drew attention to the fact that various enterprises previously assigned workers to the kolkhozes and sovkhozes during the period of "peak" loads while these workers could not be effectively used on the farms due to their lack of preparation. We decided to put an end to such a practice. We send out to help the kolkhozes and sovkhozes not merely conscientious people, but those who are prepared to work in the field. If, for example, the ochre pigment plant sends 19 workers to the Kolkhoz imeni Shevchenko, these should be equipment operators, drivers and drill operators. There are such persons at the rayon's enterprises and special exercises have been conducted for them.

We are placing great hopes on the fact that now we will be able to better utilize advanced experience and introduce it more rapidly on all the farms. In fact we have somewhat reorganized the management apparatus. The elimination of the trusts and "proms" [Industrial Administrations] made it possible to alter the structure of the sections and noticeably reduce paperwork. In truth, this could be further reduced and we are counting on this.

A large portion of our personnel is concerned with introducing the accomplishments of the pacesetters. There are already certain successes. Thus, the head zootechnician of the rayon agricultural administration P. I. Matviyenko and the chief veterinarian A. A. Vyatkin visited the Nachalo Special Farm and the Kante-mirovskiy Sovkhoz. They discovered the reasons for the mistakes made on these farms during the wintering period and suggested to the specialists how to better rectify them.

We are planning to provide wider specific aid to the kolkhozes and sovkhozes. First of all, we will endeavor to aid the laggards and teach them able management. We will disseminate everywhere the experience in economic work at the Pravda Kolkhoz where they have achieved good profitability in crop and livestock working. This is our prime obligation.

The improving of the procurement system will also strengthen the economy of the kolkhozes and sovkhozes. We are converting to having the procurers themselves transport the products produced by the kolkhozes and sovkhozes, freeing the farms from these concerns. If the enterprises do not have their own transport, they can lease it. At present, the procurers themselves which are members of our association are showing great concern for the common cause.

[Question] What difficulties are being encountered in the work of the new management body?

[Answer] We are perplexed by the fact that the superior organizations in charge of certain enterprises in our association have not yet reorganized in any manner and have not given up the old management methods. We are often phoned from the oblast and we are told that we must not go too far with RAPO and we must keep to our own affairs. In each such instance we must call in the oblast agroindustrial association. It puts those who have fallen behind the times in their place.

We are also impeded by obsolete instructions. For example, the brickyard has the right to sell its products only to an interkolkhoz construction organization. But this organization in turn takes only as many bricks as it can use. The kolkhozes want to buy the bricks which are at the yard, but are prevented from doing this by the Gosbank instructions. Upon our authorization, the plant has sold brick not needed by the interkolkhoz PMK to the kolkhozes. But the plant director was reprimanded for this.

The Gosbank should alter its attitude toward contract construction on the kolkhozes and adopt a new procedure. I think that everyone would benefit if the needs of the RAPO were more attentively considered by the bank workers. It is time to legitimize the direct labor contract method of construction.

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ROLE OF SCIENTIFIC, TECHNICAL PROGRESS IN INCREASING AGRICULTURAL PRODUCTION

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 4, Apr 83 pp 67-77

/Article by A. Vorontsov and A. Dzhakhangirov: "Basic Directions in Scientific and Technical Progress in Agriculture and in Other Sectors of the Agroindustrial Complex"/

/Text/ The 26th party congress and the May and November (1982) Plenums of the CPSU Central Committee put in the forefront key problems in the development of the agroindustrial complex. In his speech at the November Plenum Yu. V. Andropov, general secretary of the CPSU Central Committee, especially noted that, to increase economic efficiency, first of all, "...potentials must be sought in an acceleration of scientific and technical progress and in an extensive and rapid introduction of the achievements of science, technology and advanced experience into production."

The policy of an acceleration of scientific and technical progress in agriculture and in other sectors of the agroindustrial complex reflects the fundamental aims of the party's economic strategy at the present stage. In its practical activity the party is invariably guided by the Marxist-Leninist teaching of the growing role of science and technology in the life of society.

The founders of scientific communism disclosed the all-around effect of scientific and technical achievements on progressive shifts in production development and brilliantly foresaw and scientifically substantiated the thesis on the transformation of science into a direct productive force. K. Marx was the first to disclose and formulate the tendency toward the ever increasing effect of science and technological progress on the creation of true wealth (see: K. Marx and F. Engels, "Soch." /Works/, second edition, Vol 46, Part II, p 213). When developing the economic theory of socialism and the specific program for its construction in our country, V. I. Lenin stressed that socialism required "equipment built according to the last word in latest science" ("Poln. sobr. soch." /Complete Works/, Vol 36, p 300/). Lenin's famous propositions set forth by him in 1918 in "Nabrosok plana nauchno-tekhnicheskikh rabot" /Draft Plan of Scientific and Technical Work/ are also of great importance today. Attaching vast importance to the introduction of scientific and technical developments, V. I. Lenin pointed out the need to see to it "that science truly enters the flesh and blood of and is transformed into an integral element of the way of life" (Ibid, Vol 45, p 391).

The scientific literature contains a great number of various definitions of the concept of scientific and technical progress. We believe, however, that the following is the most complete and all-embracing.

Scientific and technical progress is a continuous improvement, which is brought about by the operation of objective economic laws, in all the aspects of public production and of the service sphere on the basis of the development and general utilization of the achievements of science and technology for the purpose of a practical solution of the socioeconomic and political problems facing society during a given historical period. Scientific and technical progress includes the following: fundamental and applied research on problems of natural science and social development; bringing research results up to the level of scientific and technical developments, engineering solutions and practical application; organization of the production of new equipment on the basis of scientific and technical developments and engineering solutions; improvement in technical means, forms and methods of organization of production, labor and management; expansion of the sphere of application of new equipment and advanced technology; organization of public production and on this basis retooling of all national economic sectors; creation and application of technical means for the preservation of the natural environment; improvement on a scientific basis in the structure of material production reflecting all the aspects and directions of the development of science and technology and contributing to an increase in the efficiency of public production and retooling of the non-productive sphere and of the way of life (see "Ekonomicheskaya entsiklopediya" /Economic Encyclopedia/, Moscow, 1979, Vol 3, p 42).

Therefore, in the narrower sense of the word scientific and technical progress in agriculture and in the agroindustrial complex as a whole is a process of a continuous and simultaneous development of science, technology and processing methods, of an improvement in the organization of labor and production, of an increase in the vocational and technical training of personnel and of a rise in their cultural level and an ever increasing scale of the introduction into production of the latest achievements of many fundamental and applied investigations ensuring the fulfillment of the ever more significant and large-scale aims and tasks of a developed socialist society.

Let us now examine in brief what meaning is read into the concept of scientific and technical progress in the agroindustrial complex and why the party now attaches such great importance to its acceleration.

As is well known, the country's agroindustrial complex represents a major bloc of the national economy with a complex production and economic structure. During the 1970's it accounted for approximately one-third of all the productive fixed capital and for more than 47 percent of all those employed in the sphere of material production and its output comprised about 38 percent of the entire gross national product. For the purpose of a successful realization of the food program the 26th party congress and the May (1982) Plenum of the CPSU Central Committee set the task of ensuring a unified planning and a proportional and balanced development of the agroindustrial complex, a significant strengthening of its material and technical base, an improvement in economic relations among sectors and an organization of their efficient interaction for an increase in the production of agricultural products and for an improvement in their preservation.

Implementation of further intensification of agriculture, of the industrial sectors servicing it, of the food industry and of industries connected with the procurement, storage, transportation and processing of agricultural products requires vast capital investments, as well as a profound qualitative transformation of the entire material and technical base of the sectors of the agroindustrial complex and an improvement in its production relations. A stable increase in the output of the agroindustrial complex can be attained primarily through the activation of out-of-the-way production resources, which is due to the limited or, in individual cases, simply exhausted capabilities of existing equipment and technology, of animal breeds, of crop varieties, of methods of storage, processing and transportation of agricultural products and so forth. Scientific and technical progress makes it possible not only to overcome these objective difficulties in economic growth, but also opens up previously unprecedented possibilities for an increase in the production of food products. Owing to the refinement in the technical base of the agroindustrial complex, the introduction of new techniques and of an improved labor organization and the efficient utilization of existing achievements of advanced science and technology, stable and higher rates of growth of output volumes can also be attained, which is of great social and economic importance.

Thus, as applied to individual sectors of the agroindustrial complex the introduction of the achievements of scientific and technical progress signifies not a simple increase in the quantity of existing machines, equipment and other means of production (although this is also an important measure now), but a rise in their qualitative level. In agriculture it is a matter of the creation of a new generation of machines, of a sharp improvement in their technical characteristics (reliability, productivity and efficiency), of the development of qualitatively new varieties of agricultural crops and animal breeds, of the industrialization of feed production and so forth. Similar examples can also be cited for other sectors of the agroindustrial complex. For example, in the food industry a significant reduction in the losses of output, an improvement in its quality and a decrease in labor expenditures will require not a simple increase in the capacities of modern processing enterprises, but the introduction of highly productive, new equipment making it possible to more fully and intensely process agricultural raw materials and to expand the output of food products enriched with protein, vitamins and other useful components. The role of scientific and technical progress in the agroindustrial complex increases immeasurably under the conditions of the development and step-by-step realization of overall object programs, among which the food program is of primary importance. A systematic introduction of the achievements of scientific and technical progress into all the sectors of the agroindustrial complex makes it possible to more efficiently combine the solution of urgent problems and a better mobilization of resources with long-term promising aims of agricultural development.

It should also be stressed that scientific and technical progress is one of the main factors in an increase in the economic efficiency of agroindustrial production, labor productivity growth and reduction of production costs. The growing effect of scientific and technical progress is not confined to its effect on the development of production alone. Scientific and technical progress has a vast effect on an acceleration of the solution of social problems in rural areas, which is expressed in a sharp reduction in heavy manual work, a change in the content of agricultural labor and a qualitative transformation of living and working conditions of rural workers.

Thus, no matter what problem of the development of the agroindustrial complex we examine, its solution is largely connected with an acceleration of scientific and technical progress. The role of science is especially important in the solution of problems facing the agroindustrial complex. As was especially stressed at the 26th CPSU Congress, the development of science is the main foundation for scientific and technical progress. Agricultural science, which is called upon to ensure the development of efficient systems of agricultural management throughout the country's natural-economic zones, of schemes for the placement and specialization of production and of optimum sizes of agricultural enterprises, creation of more productive varieties and hybrids of field, fodder, vegetable and fruit crops and so forth, makes a big contribution to the development of agroindustrial production.

The All-Union Academy of Agricultural Sciences imeni V. I. Lenin, which directs scientific research mainly in agriculture, has a vast scientific potential. The ministries and departments of the agroindustrial complex have a significant number of scientific institutions. On the whole, the scientific potential of the agroindustrial complex includes a wide range of organizations and institutions ensuring the implementation of scientific developments in all sectors from fundamental research to industrial application.

Taking into consideration the big role of scientific and technical progress in the realization of the food program, at the present stage it is especially important to ensure the necessary coordination and integration of all scientific investigations in the agroindustrial complex. Vast potentials for an acceleration of the introduction of scientific investigations into production lie in the combination of scientific research, experimental design and experimental work and directly production itself within a single organizational framework, that is, scientific production associations. "A close integration of science with production," it was noted at the 26th CPSU Congress, "is an urgent requirement of the modern era." Interdepartmental object programs for scientific investigations and developments in individual product subcomplexes are also indispensable conditions for ensuring high rates of scientific and technical progress.

These important principles are of tremendous significance in the realization of the tasks of an accelerated introduction of the achievements of scientific and technical progress into agriculture and the country's agroindustrial complex as a whole. However, as was especially stressed at the November (1982) Plenum of the CPSU Central Committee, the process of combination of science with production encounters certain difficulties necessitated by production reorganization, which in one way or another is reflected in the fulfillment of the state plan. "If we truly want to advance the cause of introduction of new equipment and new methods of labor," Comrade Yu. V. Andropov stressed in his speech at the plenum, "central economic bodies, the Academy of Sciences, the State Committee for Science and Technology and ministries must not merely popularize them, but disclose and eliminate specific difficulties, which hamper scientific and technical progress. Planning methods and the economic incentive system should contribute to the combination of science and production."

The 26th party congress determined the intensification and retooling of production as a strategic direction in the development of the country's economy. At the same time, it set the task of leading all national economic sectors to the forward lines of science and technology.

K. Marx pointed out that production expands "... intensively if more efficient means of production are used" (K. Marx and F. Engels, "Soch.," second edition, Vol 24, p 193). V. I. Lenin believed that the intensification of agriculture presupposed "... an intensified use of artificial fertilizers, improvement in implements and machines and growth of their use..." ("Poln. Sobr. Soch.," Vol 27, p 181). At the same time, as he noted, live labor "... is increasingly pushed into the background in the face of the labor of machines" (Ibid, Vol 1, p 78).

The presented methodological principles graphically show that potentials for an increase in the efficiency of agricultural production and in the rates of labor productivity growth should be sought in an acceleration of scientific and technical progress and in the combination of science with production.

Under the conditions of intensification of agricultural production the following directions in scientific and technical progress acquire special importance. Consideration of the differentiation in the natural and economic conditions of the country's various zones is of tremendous importance for an efficient utilization of the basic means of agricultural production--land. More than 600 million hectares of agricultural land are now in turnover. Almost 60 percent of them are located in a cold or dry climate. Therefore, a full utilization of the achievements of scientific and technical progress in the field of an efficient utilization of land resources is required.

In connection with this the methods of soil protective utilization of arable land in a number of dry regions are of tremendous importance. According to the data of A. I. Barayev, academician of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin, as a result, for example, of the introduction of subsurface soil cultivation, not only its reliable protection from erosion is attained, but a more efficient utilization of natural precipitation limited in droughty regions is ensured, which contributes to the production of higher and more stable harvests of grain and other crops. Therefore, in the country in 1977 soil was cultivated without the use of a plow on an area of 31.5 million hectares and 33.5 million hectares were seeded by means of stubble seeders. On the average, throughout the country soil cultivation without a plow and seeding with stubble seeders annually increase by 3 million hectares (see: "50 Let VASKhNIL" /50 Years of the All-Union Academy of Agricultural Sciences imeni V. I. Lenin/, Moscow, 1979, pp 71-72).

Scientifically substantiated systems of agricultural management require a careful and full consideration of the soil and climatic conditions and characteristics of natural and economic zones. The management system is a scientific base for the elaboration and implementation by every agricultural enterprise of overall measures for the development of production in the light of the modern achievements of science and practice. An overall approach to an organization of agricultural production, to a rise in the standard of farming and animal husbandry and to a highly efficient utilization of material, labor and financial resources can be ensured everywhere on this basis.

Therefore, the 26th CPSU Congress pointed out the need to increase the responsibility of farm managers and specialists and of workers of scientific research institutions and party, Soviet and agricultural bodies for the introduction of scientifically substantiated systems of agricultural management into production.

Scientific and technical progress in farming and plant growing is directed primarily toward the solution of problems of a highly productive land utilization, increase in soil fertility and attainment of high and stable harvests of all agricultural crops. Measures to overcome the negative effect of drought and soil erosion and to alleviate their consequences are of especially big importance in droughty regions and drainage reclamation, in water-logged zones. The country's scientists have developed systems of an overall approach to the solution of problems of control of water and wind erosion with due regard for local natural conditions and have given recommendations for the protection of soil against erosion and drought.

Crop rotations play a special role in the solution of problems of a significant increase in the yield of agricultural crops on the basis of the application of zonal scientifically substantiated farming systems. Agricultural science has developed valuable recommendations based on long-term experiments and generalizations of advanced practice and of the state strain testing network for various zones and microzones in the country. Long-term investigations by Soviet scientists have shown that the yield of most agricultural crops, when cultivated in a crop rotation, is 1.5 to 2 times higher than in prolonged changeless sowing (see: "Dostizheniya nauki-- el'skokhozyaystvennomu proizvodstvu" [Scientific Achievements for Agricultural Production], Moscow, 1974, p 23).

In connection with the tremendous urgency of the tasks connected with an increase in the production of livestock products scientific and technical progress in feed production acquires special significance. On farms scientific achievements in the development of field feed production and in the increase in the productivity of natural hayfields and pastures (including their cultivation, watering and irrigation) are introduced, the breeding of perennial and annual grass seeds is improved and advanced technologies of cultivation and harvesting of fodder crops and of procurement, preparation, storage and improvement in the quality of all types of feed are utilized. Scientifically substantiated systems of intensive utilization of nonirrigated and irrigated land for fodder crops play an important role. To solve the problem of meeting the needs of animal husbandry for feed protein, measures for a maximum increase in the sowing of peas, alfalfa, lupin, soybeans and other crops with a high content of protein are implemented in the appropriate zones in the country. Science has given recommendations for the utilization of straw and of the chaff of grain crops for livestock feed. Techniques of cultivation of alternate fodder crops are improved and their assortment is expanded and specified as applied to the natural and economic characteristics of the country's individual regions. Highly productive fodder crop rotations as applied to specialized livestock complexes and large farms are developed and introduced on a scientific basis. Measures for the development of the breeding of seeds of high-yielding perennial leguminous and cereal grass, of annual grass with high feed merits and of highly productive varieties of fodder root crops are implemented.

Measures to increase the productivity and rational use of meadows and pastures are implemented for an efficient utilization of natural fodder land on a scientific basis. The application of new methods of increasing the production of all types of feed, improving its quality, storing it and raising its nutritiousness and high-grade makes it possible to solve the problem of fully providing animal husbandry with high-quality feed with smaller expenditures of labor and funds per feed unit. Here are a number of positive examples from the advanced practice of establishment of a firm feed base on a scientific basis. The average productivity of natural hayfields and pastures in the country totals about 6 to 7 quintals of hay per hectare. However, with the use of scientific recommendations the indicated productivity (with comparatively low capital investments) can be doubled and even tripled. The effect from cultivated irrigated pastures is especially high. For example, on the Leninskiy Luch Kolkhoz in Krasnogorskiy Rayon, Moscow Oblast, in 1971 the productivity of each of the 278 hectares of a cultivated irrigated pasture was brought up to 9,000 or 9,500 feed units, the average milk yield per cow totaled 5,189 kg and the production of this valuable product on 100 hectares of agricultural land exceeded 1,750 quintals.

The potentials of scientific and technical progress are just as great in field feed production. At the same time, it should be kept in mind that here the main role belongs to an increase in the yield of all agricultural crops and to an accelerated introduction of the latest scientific achievements in the canning, storage, preparation and efficient utilization of feed.

Major tasks of scientific and technical progress are and will have to be solved in animal husbandry. The development and introduction, with due regard for soil, climatic and economic conditions, of highly efficient technologies of production of meat, milk, eggs and wool on an industrial basis envisaging an increase in the productivity of animals, electrification, overall mechanization and automation of production processes, improvement in the quality and reduction in the cost of products and labor productivity growth are of primary importance. The intensification of animal husbandry requires a more efficient utilization of the achievements of scientific and technical progress during the breeding and reproduction of farm animals and during the improvement of existing and development of highly productive, new pedigree groups and lines of livestock and poultry meeting the requirements of highly mechanized large farms and complexes. The introduction of efficient methods of reproduction and of industrial techniques of artificial insemination of large-horned cattle, sheep and hogs ensuring a high yield of young stock under conditions of industrial complexes and mechanized farms is also of great importance. The application of a scientifically substantiated system of a high-grade feeding of farm animals balanced in its protein-vitamin content and mineral composition with due regard for the level of their productivity, pedigree characteristics and production technology is exceptionally important.

The country has sufficient experience and examples in all natural and economic zones confirming that the introduction of scientific and technical progress into the sector makes it possible to reduce feed expenditures per unit of output by 20 to 30 percent, to double or triple labor productivity and, at the same time, to raise the productivity of animals significantly.

A systematic and steady intensification of agriculture and its specialization and concentration are possible only on the basis of retooling and overall mechanization and automation. At present principal attention is paid to industrial machine technologies of production of grain and fodder crops, sugar beets, cotton, fiber flax, potatoes, vegetables, corn, sorghum, sunflower seeds and oil crops. In the retooling of plant growing scientific and technical progress proceeds along the line of development of combined units for the combination of operations for the purpose of an efficient utilization of energy saturated and high-speed tractors and machine systems. The introduction of industrial technologies of cultivation of agricultural crops is of exceptionally promising importance here. The scientific literature rightly notes that modern industrial technologies are the result of overall developments and unify the most efficient achievements in the field of selection, agricultural technology, mechanization and economics and organization of production. In the process of introduction of the achievements of scientific and technical progress it is important to promptly solve problems of specialization and concentration, including on the basis of interfarm cooperation and agroindustrial integration, and to improve production and management structures, forms of labor organization and wages and methods of planning and economic incentives.

The scientific and technical level of production and rates of labor productivity growth, on the one hand, affect the scale, structure and dynamics of socialist public production and, on the other, depend on the tendencies and state of development and introduction of scientific and technological achievements into practice. In this connection it is necessary to pay attention to problems of scientific and technical progress and labor productivity from the reproduction aspect. Without this it is impossible to disclose the most important and in-depth factors and conditions of growth of production and labor productivity and of the saving of material and energy resources, which under conditions of systematic and all-around intensification express to the greatest extent the economic efficiency and final results of production and the quality of work in all the links of the agroindustrial complex and its main sector--agriculture.

Despite the vast achievements in the mechanization of agricultural production at present its level cannot ensure the solution of large-scale problems connected with an increase in the volumes of production and labor productivity growth in the sector. Agriculture does not yet have at its disposal a sufficient quantity of equipment and a machine and tractor pool balanced in its structure to ensure a general introduction of scientifically substantiated progressive and efficient technologies of production of products and to perform agricultural operations at the optimum agricultural engineering time. This leads to serious economic consequences. First, more than 16 million people are now engaged in nonmechanized work on kolkhozes and sovkhozes. Second, owing to disruptions in sowing periods, in the care of crops and in harvesting operations, significant deficiencies in output and big losses are observed. We will cite only two examples. According to the published data, the annual grain deficiency, owing to the lack of observance of agricultural engineering periods of agricultural work caused by the shortage of equipment, is estimated by economists at 35 to 40 million tons (see: *EKONOMIKA SEL'SKOGO KHOZYAYSTVA*, 1979, No 11, pp 35-36). Furthermore, a great deal of grain is still lost every

year on open grounds and premises adapted for its storage on kolkhozes and sovkhozes, as well as during its storage, drying and processing in the system of the USSR Ministry of Procurement. Therefore, among the basic directions of scientific and technical progress the leading role belongs to the overall electromechanization and automation of agricultural production and to the strengthening of the material and technical base of all the sectors of the agroindustrial complex.

In the process of implementation of the policy of socialist transformation and technical reconstruction and then the transition to a systematic intensification of agriculture, especially during the period following the March (1965) Plenum of the CPSU Central Committee, the technical level of equipment on kolkhozes and sovkhozes rose significantly. The introduction of overall mechanization and in individual processes of automation as well led to a fundamental qualitative change of the entire technological nature of agricultural production. The process of mechanization was carried out in combination with a systematic social and economic development of agriculture, rise in the degree of its socialization, specialization and concentration and improvement in planning and in the economic mechanism.

It is important to note that from the point of view of historical development the process of mechanization of agriculture in animal husbandry began much later as compared with plant growing. Essentially, the beginning of mechanization of the most labor intensive processes in animal husbandry began to be manifested noticeably in 1965. Therefore, there are now many more urgent problems of mechanization of production processes in animal husbandry. Their accelerated solution is envisaged by the country's food program.

The process of mechanization appears not only as a factor in the intensification of agricultural production, but also as the material basis for the replacement of old technology of manual labor and horse traction with new technology with an ever broader participation of machine technology, and at the present stage of machine systems as well, and of technological machine complexes in the production of agricultural products.

V. I. Lenin connected the problems of rise in the technical level of production on the basis of application of progressively developing machine technology primarily for the disengagement of manual labor. In this connection he noted that "the entire progressive work of human technology lies... in the replacement of manual labor with machine labor. The more highly technology develops, the more man's manual labor is displaced, being replaced with a number of more and more complex machines..." ("Poln. Sobr. Soch.," Vol 1, p 100).

The process of mechanization and industrialization of agriculture is characterized by a growing number of diverse machines delivered to rural areas. Whereas in 1940 agriculture obtained 84 different types of agricultural machinery and equipment, in 1950, a total of 222, in 1956, a total of 490, in 1970, a total of 724 and in 1975, about 1,500, at the beginning of the 11th Five-Year Plan the machine system envisaged more than 1,717 types of technical facilities in production. The adopted system of machines for overall mechanization of agricultural production included 1,166 types of machines during the

7th Five-Year Plan, 1,570, during the 8th Five-Year Plan, 2,360, during the 9th Five-Year Plan and 2,965, during the 10th Five-Year Plan. In the system of machines for 1981-1985 the total number of technical facilities is 3,666 types, including 1,888 for plant growing, 988 for animal husbandry and 587 for reclamation. According to the data of the All-Union Scientific Research Institute of Agricultural Mechanization, the introduction of the new machine system in plant growing will reduce the calculated expenditures throughout the country by more than 5.4 billion rubles and work time expenditures, by 4.3 billion man-hours annually. In basic plant growing sectors labor productivity will increase 1.3- to 1.5-fold. The application of the new machine system for overall mechanization of animal husbandry will ensure the mechanization of many production and labor operations. According to the calculations of the All-Union Scientific Research Institute of Electrification of Agriculture, operating costs of the production of livestock products will be reduced by 25 to 30 percent and direct labor expenditures, by one-half and more, which will make it possible to decrease the size of the service personnel by 1.1 to 1.2 million people.

These examples clearly show that every new stage in the improvement in machines ensures progressive changes in the technological method of production of agricultural products and the saving of live manual labor and makes it possible to more fully utilize in practical activity the achievements of science and technology in plant growing and animal husbandry.

At the same time, under the conditions of the objective need for the introduction of resource and, especially, energy saving technologies in agriculture and other sectors of the agroindustrial complex this task should be realized primarily through farming and machine systems. Minimal soil cultivation, which makes it possible depending on agroclimatic conditions to lower energy expenditures by 30 to 80 percent, attracts attention directly in farming technology in the indicated problem. The combination of technological operations as a result of the development of combined units plays an important role in the saving of petroleum products, which lowers total energy intensiveness by 20 to 50 percent. On the basis of the task of introduction of energy saving technologies systems of agricultural management throughout the country's natural and economic zones should be improved and new technological solutions should be introduced into practice. Scientific and technical progress in agricultural machine building should be directed toward this in order to develop tractors and technological complexes with a higher coefficient of energy utilization.

The USSR Food Program maps out important, new measures in the field of overall mechanization and retooling of agricultural production. It envisages delivering the following to agriculture during the 10th Five-Year Plan: 3,740,000 to 3,780,000 tractors, no less than 200,000 excavators, 215,000 bulldozers, 93,000 scrapers, 13,000 motor graders, 1,170,000 grain harvesting combines and other agricultural machines worth 67 to 70 billion rubles, including worth 38 to 40 billion rubles for plant growing and worth 29 to 30 billion rubles for animal husbandry and feed production. The quality, reliability and durability of agricultural machines will be improved significantly. The release of electric power to agriculture will be increased. It will total 210 to 235 billion kwhr. The engineering service will be strengthened considerably and its responsibility for the utilization and preservation of equipment will be raised,

which is very important with the growing deliveries of technical and technological systems for overall mechanization and automation of production processes, not of individual uncoordinated machines, to kolkhozes and sovkhozes.

The introduction of fundamentally new machines and mechanisms--powerful energy saturated and high-speed row tractors, rotor grain harvesting combines, self-propelled machines for various purposes, precision seeders, wide-cut units, antierosion equipment of a new generation, machines for a uniform application of fertilizers and overall equipment for feed production and preparation--will make it possible to greatly increase the reliability of agricultural equipment and to ensure its highly efficient utilization in the very near future.

Altogether all these measures will contribute to the completion, for the most part before 1990, of overall mechanization of farming and animal husbandry and to an extensive spread of industrial technologies of production of agricultural products on this basis.

At present a successful attainment of high final results in meeting the country's needs for foodstuffs and of industry for agricultural raw materials is possible only provided the entire production and economic potential of the agroindustrial complex is utilized efficiently and its sectors are intensified in an all-around manner on the basis of scientific and technical progress.

Large-scale tasks have been determined in the field of development of scientific and technical progress in the sectors of the first sphere of the agroindustrial complex. In tractor and agricultural machine building and in machine building for animal husbandry and feed production: To develop capacities and to organize the manufacture of the necessary set of highly productive machines for the introduction of industrial technologies into farming, including powerful tractors of K-700, T-150 and other types, as well as of the entire complex of necessary machines and implements for them; to increase the output of sets of highly efficient machines and equipment ensuring the introduction of progressive technological processes of procurement, preparation and distribution of feed and of keeping and raising of livestock and poultry. Technical progress and production growth in the motor industry and in construction, road and municipal machine building will have a positive effect on the development of the agroindustrial complex. The development of machine building for light and food industry plays a special role for the introduction of scientific and technical progress into the third sphere of the agrocomplex. The task of developing and embarking on the production of highly efficient systems of machines and equipment ensuring the mechanization and automation of technological processes, overall utilization of agricultural raw materials and reduction of losses during their processing, storage and delivery to the consumer has been set.

More than 200 new types of machines are to be delivered to agriculture during the 11th Five-Year Plan and the train of manufactured mechanisms for powerful tractors will be increased by the end of the five-year plan. Previously, 60 types of such machines were manufactured and now, 101. Measures are taken to begin the output of new tractors simultaneously with the production of the train of machines for them. This will make it possible to increase the efficiency of tractor utilization (see: VOPROSY EKONOMIKI, 1982, No 11, pp 63-64).

Scientific and technical progress in the system of the State Committee for Supply of Production Equipment for Agriculture will be expressed in the further concentration and specialization of the repair-service base, in its retooling with modern and highly productive equipment, in the preferential development of the repair base for the technical servicing and current repair of machines with the utilization of repaired subassemblies and units and in the establishment of stations for the technical servicing of energy saturated tractors, motor vehicles and equipment on stock raising farms. Of great importance is a rise in the technical level of machine testing stations, on whose operation the quality and reliability of agricultural machines arriving on kol-khozes and sovkhozes largely depend. All this will make it possible to significantly increase the role of the State Committee for Supply of Production Equipment for Agriculture in the rise in the level of technical preparedness and productivity and in the extension of the life of tractors, combines and other technical facilities forming part of the system of machines ensuring overall mechanization and, in a number of production processes, automation of agricultural production.

An especially important place belongs to the introduction of scientific and technical progress into the sectors of the agroindustrial complex providing for the chemicalization of agriculture. According to the calculations of scientists, overall chemicalization increases crop output by 50 to 55 percent. It becomes to an ever greater extent the most important factor in the increase in land fertility and in the growth of yield of agricultural crops. Essentially, production and scientific production subdivisions of the Scientific Production Association for Agrochemical Services to Agriculture were established in all agricultural rayons, oblasts and republics. During the brief period of its development the agrochemical service in rural areas has accumulated a rather significant production and scientific potential. The Scientific Production Association for Agrochemical Services to Agriculture has at its disposal 15 scientific research institutes, 206 planning and surveying chemicalization stations, 154 plant protection stations, 102 toxicological laboratories and other scientific and technological subdivisions.

Important tasks concerning the introduction of scientific and technical progress into the Scientific Production Association for Agrochemical Services to Agriculture are outlined in the decree of the CPSU Central Committee and the USSR Council of Ministers "On Measures To Strengthen the Material and Technical Base of the Agrochemical Service and To Increase the Efficiency of Chemicalization of Agriculture in 1981-1985." The main content of this directive document is directed toward solving at accelerated rates on the basis of scientific and technical progress problems connected with a rise in the role of the agrochemical service in agriculture and in its responsibility for an efficient application of mineral and organic fertilizers, lime materials and chemical plant protection agents, increase in economic land fertility and growth of the yield of agricultural crops.

The development of scientific and technical progress in other sectors and spheres of the agroindustrial complex is of no lesser importance.

The introduction of scientific and technical progress into the food industry at present is especially important, because, despite the significant scale of development, on the whole, it does not yet meet the tasks of realization of the food program advanced by the party. The introduction of scientific and technical progress has proceeded at especially accelerated rates in a number of its sectors in the last few years. For example, a reconstruction of pressing facilities with a replacement of unproductive equipment with mechanized flow lines of a productivity of 30 to 50 tons of grape processing was carried out in initial winemaking. In the canning industry the changeover from continuous operating to noncontinuous operating equipment has been completed and powerful vacuum apparatus for cooking at lowered temperatures have been introduced. Highly productive pack presses, filter presses and so forth are utilized widely (see: EKONOMIKA SEL'SKOGO KHOZYAYSTVA, 1982, No 1, p 17).

The most promising directions in the introduction of scientific and technical progress into the food industry are connected with the increase in the production of products and semifinished products ready for use, expansion of the assortment of food products enriched with protein and vitamins and application of new packaging materials ensuring a prolonged preservation and a reduction of losses. Methods of direct extraction in the production of vegetable oil, the aseptic method of canning fruits, berries and vegetables and progressive methods of storing agricultural raw materials will be used widely. An important direction in scientific and technical progress in the meat and dairy industry includes the mastering of overall mechanized lines for the production of sausages, semifinished meat products, pot cheese and other products. The development of the material and technical base for a widespread transfer of the processing industry to the acceptance of livestock, milk, fruits and vegetables at the places of their production with a subsequent delivery to processing enterprises by the specialized transport facilities of procurement organizations will be of great organizational and economic significance.

The systematic implementation of scientific and technical progress is most visibly manifested in a rapidly progressing sector of the agroindustrial complex--the microbiological industry. Strictly speaking, the very birth of this sector is connected with scientific discoveries and achievements in the field of chemistry and biology. The prospects for the further acceleration of scientific and technical progress here will be expressed in the introduction of highly productive apparatus and production lines of a big unit capacity, as well as in the selection of production cultures of microorganisms. This will make it possible to significantly increase the production of microbiological commodity feed protein and lysine, antibiotics for feed and veterinary purposes and feed vitamins, as well as enzyme preparations, premixes, microbiological plant protection agents, bacterial fertilizers and other output of microbiological synthesis.

Meeting the needs of enterprises for the procurement, storage, processing and sale of agricultural products for capacities of refrigerating equipment for keeping perishable food products is an urgent problem of scientific and technical progress in them. This is especially important, because the food program envisages the allocation of a significant share of capital investments for the construction and modernization of enterprises for the processing and storage of agricultural products, including directly in agricultural enterprises.

The need for the introduction of waste-free technology of processing of agricultural raw materials should be pointed out especially. However, the solution of the indicated urgent problem is possible only provided the material and technical base is developed appropriately and scientific and technical progress is introduced.

The experience of Krasnodar Kray, where much attention is paid to an overall utilization of agricultural raw materials and to the introduction of low-waste and waste-free technologies during their processing, deserves attention and dissemination. This makes it possible to utilize the waste of agricultural output (which is formed directly in agriculture, as well as the waste of industrial sectors processing agricultural products) mainly in animal husbandry sectors for the strengthening of the feed base and for an additional increase in the production of milk, meat, eggs and wool. On the kray's farms a broad network of feed shops and a developed mixed feed industry have been established, plants for the production of meat and bone meal operate and much significance is attached to the utilization of food waste received from the population and public dining enterprises for feed purposes.

Waste-free technology is also widely applied at enterprises processing agricultural raw materials, that is, in the milk and dairy industry. For example, the processing of whey has reached 80 percent. During the 10th Five-Year Plan the utilization of blood for food purposes increased by 20 percent, of bones, by 32 percent and of second-category subproducts, by more than 20 percent. Along with this the utilization of technical waste has been improved considerably, which makes it possible to replenish the feed base. At the same time, an increase of 9 percent in the yield of final output per ton of raw materials has been attained (see PLANOVoye KHOZYAYSTVO, 1981, No 12, pp 12-13).

The presented examples show that technical progress in the equipment, technology and organization of production and in the processing, transportation, storage and consumption of agricultural products is a major potential for the fulfillment of the food program.

The development of motor transport and the establishment of the necessary network of motor roads are of great importance for the intensification of agriculture and the entire agroindustrial complex in the country. Scientific and technical progress in the solution of transport problems is totally necessary, because the economy of farms, as well as the solution of social problems in rural areas, depends on transport operation to a significant degree.

A rise in the average freight capacity of delivered machines and a significant increase in the share of dump trucks are the main directions in the development of agricultural transport on a new technological base. Therefore, during the 11th Five-Year Plan the production and delivery of trucks with loading and unloading devices and of transport facilities for the conveyance of livestock, poultry, live fish and liquid complex fertilizers to agriculture are increasing, the designs of highly mobile special motor vehicles and motor trains will be developed and their series output will be organized.

Even more important tasks concerning the development of motor transport capacities on the basis of scientific and technical progress are envisaged by the food program. More than 3 million trucks, 3.2 to 3.3 million tractor trailers, 110,000 to 115,000 milk trucks, 50,000 to 53,000 semitrailer livestock trucks and 29,000 to 30,000 refrigerating and isothermal railroad cars will be delivered to the sectors of the agroindustrial complex by 1990.

Along with the increase in the scale of use of motor transport in the agroindustrial complex there are vast potentials for an improvement in its utilization. For example, advanced methods of organization of transport operations by means of computers in Saratov Oblast made it possible to increase labor productivity 2.3-fold during the transportation of grain output at the time of harvest operations (see: KOMMUNIST, 1982, No 12, p 40).

The increase in the efficiency of agriculture and in the operation of motor transport facilities cannot be examined separately from the role and significance of motor roads in the structure of the country's agroindustrial complex. According to available data the annual losses of agriculture owing to the lack of roads exceed 5 to 7 billion rubles. For the same reason, on the average, a motor vehicle annually accounts for 40 days of idle time in rural areas. Furthermore, owing to the lack of country roads and in connection with this the passage of motor vehicles through crops up to 5 percent of the grain harvest and 10 to 15 percent of the output of fodder from hayfields perish under their wheels (see: IZVESTIYA, 1981, 9 October, p 3). According to the calculations of scientists, for example, on kolkhozes and sovkhoses in the non-chernozem zone of the RSFSR 6 km of hard-surface roads per 100 hectares of agricultural land are needed and this length should be considered minimal. The food program envisages the construction of approximately 130,000 km of public motor roads and of 150,000 km of intrafarm roads in rural areas before 1990.

Thus, only on the basis of a widespread utilization of the achievements of science and technology is it possible to ensure the high rates of increase in the production of agricultural products envisaged by the food program and a fuller satisfaction of the population's needs for high-quality food products and of the industry's needs for agricultural raw materials and to ensure and to always have reliable state food stocks and reserves and for a number of products the necessary export resources as well.

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UKRAINIAN PRICE OFFICIAL ON PURCHASE PRICES

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 3, Mar 83 pp 13-20

[Article by V. Shamborskiy, chairman of UkSSR State Committee for Prices:
"Purchase Prices and Cost-Accounting (khozraschet) Relations in Agriculture"]

[Text] The USSR Food Program for the Period up to the Year 1990 has outlined a set of interrelated measures aimed at a further growth of agricultural production. Much attention is being paid in that connection to improvement of the economic mechanism, to strengthening cost accounting in kolkhozes, sovkhoses and other agricultural enterprises, and to strengthening their financial motivation to increase production and to improve the quality of farm products.

Correct and economically sound structuring of the system of prices of the means of production and production services to be furnished to agriculture on the one hand and of purchase prices for agricultural products on the other, that is, guaranteeing equivalent commodity exchange between the industrial and agricultural spheres of social production, has an important role to play in solving the problem of strengthening the economy of kolkhozes and sovkhoses.

An analysis of prices of agricultural products and of products which industry delivers to it shows that on the whole, given the constantly increasing volume of deliveries of industrial products to agriculture and of the services rendered to it, the price relation is forming unfavorably for agriculture. At the same time the entire rise of production costs of kolkhozes and sovkhoses cannot be attributed to the rise of wholesale prices of agricultural equipment and other industrial products which agriculture acquires. To a considerable extent this increase has been brought about by shortcomings in organization of the economic activity carried on by the kolkhozes and sovkhoses themselves--specifically by the suboptimal use of the sector's fixed productive capital and the comparatively low level of farm crop yields and livestock productivity. Farms which have identical conditions have differing levels of profitability at the same prices, which is especially noticeable when one studies the economic indicators of progressive and lagging farms.

One of the measures aimed at creating stable economic conditions for the cost-accounting activity of kolkhozes and sovkhoses, which represent the main link in the agrarian complex, is to improve the pricing of farm products. The

purchase prices of a number of farm products, above all meat, milk, vegetables and potatoes, are higher than the retail prices of the respective products. Nevertheless, as of 1 January 1983, in accordance with the decisions of the May (1982) Plenum of the CPSU Central Committee, purchase prices have been raised again on grain crops, sugar beets, potatoes, cattle, hogs, sheep, milk and other agricultural products, and supplements to the purchase prices have also been introduced for products produced under less favorable natural and economic conditions and sold to the state by kolkhozes, sovkhozes and other agricultural enterprises with low profitability or operating at a loss. The state has allocated an additional 16 billion rubles a year for these purposes.

Fundamental changes are being made in the economic relations between sovkhozes and kolkhozes on the one hand and the organizations which serve them--Selkhoztekhnika, and construction, reclamation and procurement organizations. Along with the level of services rendered, the results of agricultural production, that is, the yield of farm products, will be made the basis for evaluating the performance of the latter organizations and of their supervisory personnel and specialists.

New purchase prices have been adopted in our republic, and appropriations have also been made by oblasts for the purpose of establishing over the period 1983-1985 supplements to purchase prices of farm products sold to the state by kolkhozes, sovkhozes and other agricultural enterprises operating at low profitability or at a loss. The purchase prices of grain crops, sugar beets, sunflower seed, vegetables, grapes, potatoes, cattle, sheep and milk are differentiated by zones. Uniform purchase prices have been established in UkSSR for corn, rice, hull and pod crops, products of long-staple flax, hemp and essential oil crops, hops, fruit, swine and poultry.

The Ukraine's kolkhozes and sovkhozes will receive an additional amount of more than 3.6 billion rubles per year in connection with adoption of the new purchase prices and price supplements. Sizable opportunities are opened up before croppers and stockmen for increasing the production of agricultural products and for strengthening the economy of the farms. For example, the purchase prices for grain have been raised by 236 million rubles, which will make it possible to raise the profitability of wheat production to 71 percent, that of rye to 118 percent and millet to 91 percent. The new prices have been set on individual crops at the levels shown in Tables 1 and 2. Oats in the most valuable grades (according to a list adopted annually by USSR Minsel'khoz [Ministry of Agriculture] jointly with USSR Minzag [Ministry of Procurements]), used for the production of groats, will be 30 percent more expensive than ordinary oats. The purchase price for kernel rice (unhulled), grown without the use of pesticides on specialized farms designated by USSR Minsel'khoz in agreement with USSR Minzag and used for making dietetic flour, has been set at the level of 1,200 rubles per ton of grain in the basic grades. Kolkhozes, sovkhozes and other agricultural enterprises and organizations are sold seed grain (except for corn) at the purchase prices in effect, with reimbursement of enterprises of USSR Minzag for distribution and shipping costs (at a rate of 15 rubles per ton). Money supplements for quality are also charged on the sale of quality seed depending on the quality of the seed issued. For every ton of sunflower seed the state will pay the farms an average of 230 rubles,

that is, 55 rubles more, and 70 rubles more per ton of buckwheat. In all the purchase prices have been raised for 46 different farm products.

Table 1. (Rubles per ton of grain in the basic grades)

<u>Crop</u>	<u>Zone</u>			
	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>
Soft wheat	94	99	129	144
Rye	120	123	160	176
Millet	145	163	170	170
Oats	80	100	130	130
Feed barley	84	103	129	129

Table 2. (Rubles per ton of grain in the basic grades)

<u>Crop</u>	<u>Price</u> <u>(universal)</u>
Corn:	
Ricey, waxy and high-lysine	175
Flint, white and yellow	140
Dent, white and yellow, starchy, uniform in color, semident and semiflint	120
Varied (mixture)	110
Buckwheat	400
Rice grain (rough)	320
Millet in the most valuable grades (according to the list annually issued by USSR Minzel'khoz jointly with USSR Minzag)	200
Soybeans	400
Mustard seed	300
Triticale	Paid for at purchase price for soft wheat
Sunflower seed:	
Zone I	235
Zone II	229

The purchase prices for sugar beets have risen an average of 20.6 percent, or 361 million rubles for the 1982 purchases plan. The prices of sugar beets are differentiated by three zones, as they were earlier, but now the makeup of these zones has been revised. That is, the third zone has been expanded--that is, the zone with the highest purchase price (42.8 rubles per ton). In addition to Volyn Oblast, it now includes Zhitomir, Ivano-Frankovsk, Lvov and Rovn Oblasts. The first zone (with a purchase price of 40.2 rubles per ton of sugar beets) now includes oblasts with conditions most favorable to raising this crop: Vinnitsa, Kiev, Cherkassy, as well as Poltava, Kharkov and Chernigov Oblasts, which were previously in the second zone. The purchase price of sugar beets has been set at 41.4 rubles per ton in the second zone, which includes Dnepropetrovsk, Kirovograd, Nikolayev, Odessa, Sumy, Ternopol, Khmel-nitskiy and Chernovtsy Oblasts.

Allocations to raise the purchase prices amount to 50 million rubles for potatoes and 83 million rubles for vegetables grown in the open. The purchase prices for food potatoes have been raised an average of 24 percent and (by contrast with the procedure previously in effect) have been set according to the date of sale (see Table 3). Potatoes in the highly valuable table varieties (Gatchinskiy, Iskra, Ogonek, Smachnyy, Stolovyy-19 and Temp) sold to the state by kolkhozes, sovkhozes and also other agricultural enterprises and organizations, if they are sold within our republic, will be paid for as of 1 September at the purchase prices of food potatoes, plus a supplement in the amount of 20 rubles per ton. Thus, as before, the purchase prices of potatoes are differentiated by three zones, and the list of oblasts included in each zone has remained intact--with the exception of Transcarpathian Oblast, which, in view of the conditions for production of this crop, has been moved from the second to the third zone. As for the purchase prices of vegetable crops, their zonal division has mainly remained intact. The purchase prices of tomatoes have been set for three zones; Kiev and Kharkov Oblasts have been moved from the first to the second price zone, which includes the forest-steppe oblasts.

In view of the considerable differences in the conditions for raising onions and in the production cost, the purchase prices of onions have been set for two zones. The first zone, for which the price of the pungent varieties of onion have been set at 320 rubles per ton, includes Voroshilovgrad, Dnepropetrovsk, Donetsk, Zaporozhye, Kirovograd, Crimean, Nikolayev, Odessa and Kherson Oblasts. The other oblasts of the republic have been put in the second zone--with a price of 345 rubles per ton of onions.

Table 3. Purchase Prices of Food Potatoes (rubles per ton)

<u>Zones and Oblasts</u>	<u>Delivery Date</u>	<u>Price</u>
Zone I--Volyn, Zhitomir, Ivano-Frankovsk, Kiev, Lvov, Roven, Sumy, Ternopol, Khmel'nitskiy, Chernigov Oblasts	From 11 to 31 August	123
	From 1 September to 30 November	123
	From 1 December to 1 March	135
	1 March and thereafter	143
Zone II--Vinnitsa, Kirovograd, Poltava, Kharkov, Cherkassy, Chernovitsy Oblasts	From 16 to 31 August	129
	From 1 September to 30 November	129
	From 1 December to 1 March	144
	1 March and thereafter	154
Zone III--Voroshilovgrad, Dnepropetrovsk, Donetsk, Transcarpathian, Zaporozhye, Nikolayev, Crimean, Odessa, Kherson Oblasts	From 1 September to 30 November	137
	From 1 December to 1 March	151
	1 March and thereafter	161

An allocation of 27.5 million rubles has been made to raise the purchase prices of fruit and grapes, including 11 million rubles for table grades of grapes in order to make their production more profitable. Because certain industrial varieties of grapes have been grown at a loss or at a low rate of profit on farms of Transcarpathian Oblast and in the zone of the Lower Dnieper sands in Kherson Oblast, the purchase prices of these varieties have been raised 1.2 million rubles in the aggregate.

Two-thirds of the funds allocated by UkSSR have been committed to raising purchase prices of the products of animal husbandry. For instance, the purchase price of Grade I milk is foreseen at an average level of 322 rubles per ton (as against the price of 261 rubles in effect in 1982), which will make it possible for kolkhozes and sovkhozes to obtain approximately 800 million rubles more. The purchase prices of milk have moreover been differentiated by two zones: the industrial zone, for which higher purchase prices have been set, includes Donetsk and Dnepropetrovsk Oblasts and the suburban rayons of Kiev, Kharkov, Voroshilovgrad, Zaporozhye and Odessa, and the second includes the other oblasts and rayons of the republic (see Table 4). A supplement at the rate of 10 rubles per ton of milk with the base milkfat content is paid in addition for Grade I milk that is sold at a temperature no higher than 10° C at the moment of acceptance.

The purchase price of average-finish cattle has been set at an average of 1,450 rubles per ton, that is, raised 148 rubles. This will make it possible for the farms to obtain about 400 million rubles more on the basis of the planned volume of cattle sales. Purchase prices have been set on cattle for two price zones instead of the three that existed previously: the so-called mountain zone, created in 1981, was abolished because it did not justify itself. The polessie oblasts, the former mountain zone and certain rayons of other oblasts were put in the first zone. The purchase prices were set for this zone at the level of those envisaged for Belorussian SSR (see Table 5). Category I calves are paid for at the prices of high-finish cattle, and Category II calves at the prices of average-finish cattle. Purchase prices of swine are uniform as to zone for the four categories of finish: from 1,275 to 1,870 rubles per ton, 3,000 rubles for suckling pigs and 1,020 rubles for sub-standard swine.

Table 4. Purchase Prices of Milk, Differentiated by Zones and Grades (rubles per ton of milk at the base milkfat content)

<u>Zones and Oblasts</u>	<u>Grade I</u>	<u>Grade II</u>	<u>Substandard</u>
Zone I			
Voroshilovgrad Oblast--Antratsitovskiy, Krasnodonskiy, Lutuginskiy, Novoaydarskiy, Perevalskiy, Popasnyanskiy, Sverdlovskiy, Slavyanoserbskiy, Stanichno-Luganskiy Rayons	330	308	260
Dnepropetrovsk Oblast	330	308	260
Donetsk Oblast	330	308	260
Zaporozhye Oblast--Berdyanskiy, Vasilevskiy, Volnyanskiy, Zaporozhskiy, Kamensko-Dneprovskiy, Novonikolayevskiy, Orekhovskiy Rayons	330	308	260
Kiev Oblast--Baryshevskiy, Borispolskiy, Borodyanskiy, Brovarskiy, Vasilkovskiy, Vyshgorodskiy, Ivankovskiy, Kiyevo-Svyatoshinskiy, Makarovskiy, Obukhovskiy,			

Table 4 (continued)

<u>Zones and Oblasts</u>	<u>Grade I</u>	<u>Grade II</u>	<u>Substandard</u>
Pereyaslav-Khmelnitskiy, Polesskiy, Fastovski, Chernobylskiy, Yagotinskiy Rayons	330	308	260
Odessa Oblast--Belgorod-Dnestrovskiy, Belyayevskiy, Ivanovskiy, Kominternovskiy, Ovidiopol'skiy, Razdelnyanskiy Rayons	330	308	260
Kharkov Oblast--Balakleyskiy, Gotvaldovskiy, Dvurechanskiy, Dergachevskiy, Zolochevskiy, Kupyanskiy, Pervomayskiy, Kharkovskiy, Chuguyevskiy, Shevchenkovskiy Rayons	330	308	260
Zone II			
Other oblasts and rayons of Ukrainian SSR	317	295	247

Table 5. Purchase Prices of Cattle (rubles per ton of live weight)

<u>Zones and Oblasts</u>	<u>Finish</u>			<u>Emaciated (below standard)</u>
	<u>High</u>	<u>Mod- erate</u>	<u>Below Average</u>	
Zone I				
Volyn, Transcarpathian, Ivano-Frankovsk, Lvov, Roven Oblasts	1,920	1,600	1,200	960
Zhitomir Oblast--Baranovskiy, Volodarsko-Volynskiy, Dzerzhinskiy, Yemilchinskiy, Zhitomirskiy, Korostyshevskiy, Luginskiy, Malinskiy, Narodichskiy, Novograd-Volynskiy, Ovruchskiy, Odevskiy, Popelnyanskiy, Radomyshl'skiy, Chervonoarmeyskiy, Chernyakhovskiy Rayons	1,920	1,600	1,200	960
Kiev Oblast--Baryshevskiy, Borispolskiy, Borodyanskiy, Brovarskiy, Vasilkovskiy, Vyshgorodskiy, Ivankovskiy, Kiyev-Svyatoshinskiy, Makarovskiy, Obukhovskiy, Polesskiy, Fastovski, Chernobylskiy Rayons	1,920	1,600	1,200	960
Crimean Oblast--Bakhchisarayskiy Rayon	1,920	1,600	1,200	960
Sumy Oblast--Glukhovskiy, Krolevetskiy, Konotopskiy, Seredino-Budskiy, Putivalskiy, Shostkinskiy, Yampolskiy Rayons	1,920	1,600	1,200	960
Khmelnitskiy Oblast--Izyaslavskiy, Polonskiy, Slavutskiy, Shepetovskiy Rayons	1,920	1,600	1,200	960

Table 5 (continued)

<u>Zones and Oblasts</u>	<u>Finish</u>			<u>Emaciated (below standard)</u>
	<u>High</u>	<u>Mod- erate</u>	<u>Below Average</u>	
Chernigov Oblast--Borznyanskiy, Gorodnyanskiy, Ichnyanskiy, Kozeletskiy, Koropskiy, Koryukovskiy, Kulikovskiy, Menskiy, Nezhinskiy, Novgorod-Severskiy, Nosovskiy, Repkinskiy, Semenovskiy, Sosnitskiy, Chernigovskiy, Shchorskiy Rayons	1,920	1,600	1,200	960
Chernovtsy Oblast--Vizhnitskiy, Glybokskiy, Kitsmanskiy, Putilskiy, Storozhinetskiy Rayons	1,920	1,600	1,200	960
Cherkassy Oblast--Kanevskiy, Chigirinskiy Rayons	1,920	1,600	1,200	960
Zone II				
Other oblasts and rayons of Ukrainian SSR	1,660	1,384	1,038	832

Wholesale prices were raised on sheep and goats (15 percent), on wool (12 percent), and also on sales to the state by kolkhozes, sovkhoses and individuals of goat hair (an average of 30 percent), raw hides, sheep skins for fur coats and furs and pelts from the fur trade (by 100 percent), skins of mink raised in cages (10 percent), skins of foxes raised in cages (20 percent, and raw intestines and rennet (50 percent). It should be taken into account that products produced in 1982 and sold to the state this year (potatoes, flax, hemp, root crops, wool, etc.) are already being paid for at the new purchase prices.

As of 1 January 1983 the purchasing of live rabbits from kolkhozes, sovkhoses and individuals at negotiated prices has been made the responsibility of consumer cooperative organizations. The meat of rabbits will be sold by cooperative trade organizations and will be credited to their fulfillment of the state plan for retail commodity sales, and the live weight of these rabbits will be credited to fulfillment of the state plan for purchases of livestock and poultry for kolkhozes, sovkhoses and other agricultural enterprises. For countersales to individuals selling the products of rabbit raising to the state, provision has been made to allocate fur products from rabbit skins (on the basis of up to 50 percent of the value of those they have sold to the state).

The 50-percent supplement to purchase prices established for kolkhozes, sovkhoses and other agricultural enterprises over the period 1981-1985 has been retained on grain, livestock, poultry, milk, wool, eggs, sunflower seed, sugar beets, flax, hemp, potatoes, tobacco and other farm crops for sale to the state over and above the average level achieved in the 10th Five-Year Plan, as have the 35- and 50-percent supplements for heavy young cattle which they sell.

Beginning 1 January 1983 kolkhozes, sovkhoses and other state agricultural enterprises and organizations, as well as interfarm enterprises (organizations) have been paying for gasoline and also other petroleum products and materials and equipment (including markups of supply organizations), piped gas, major repairs and technical services at wholesale prices and rates in effect since 1 January 1982. At the same time agricultural organizations will still enjoy the same conditions and procedure for reimbursement from the state budget of the difference between the wholesale prices introduced as of 1 January 1982 on manufactured fertilizers, tractors, motor vehicles, trailers drawn by motor vehicles and agricultural machines and the prices at which those products are now being sold. The preferential rates in effect for electric power released to kolkhozes, sovkhoses and other agricultural enterprises for production needs as well as for thermal energy and piped gas released to greenhouse and hothouse farms have also been retained.

Introduction of the new purchase prices and the supplements to those prices necessitates a great deal of work at the local level--especially to identify farms operating at low profitability and at a loss and to establish the differentiated supplements to the new purchase prices for them. These supplements are not to be allowed to cover oversights and poor management. Their purpose is to strengthen the economic condition of farms, to create conditions for authentic cost accounting, to strengthen the financial motivation of agricultural enterprises to increase the output of farm products.

Oblispolkoms, on the representation of councils of rayon agroindustrial associations, councils of oblast agroindustrial associations, and price departments of oblispolkoms are to set forth the lists of kolkhozes, sovkhoses and other agricultural enterprises operating at low profitability and at a loss and to determine the size of the supplements in percentage of the new purchase prices (so as to take into account supplements and deductions for product quality) within the limits of the appropriations allocated to this.

For products on which seasonal purchase prices have been established (potatoes and vegetables), the supplements to their purchase prices may be established for farms operating at low profitability and at a loss in terms of rubles per ton. The maximum size of the supplement to the purchase price for each type of farm product is set at no higher than 75 percent of the purchase price, and for potatoes and vegetables no higher than 75 percent of the average purchase price, taking into account the planned dates of their sale and the times when those prices are in effect. The total amounts and the size of the supplements to the wholesale prices are calculated by groups of farms and types of farm products relative to the planned volume of purchases of farm products in 1982 (except for products sold on the kolkhoz market, products sold to sovkhos workers and employees, products consumed in the serving of meals, pedigreed livestock, and also eggs produced on the farm used for incubation). For livestock fattening farms the supplements are calculated on the basis of the planned (1982) weight gain of livestock during fattening and maturing.

It is not recommended that the supplements be furnished in proportions at which the total profitability of farms operating at low profitability and at a loss (when these supplements are included) will be higher than that of neighboring farms which have not received them. The supplements to the purchase

prices of farm products for farms operating at low profitability and at a loss are not taken into account when the 50-percent supplement to wholesale prices is calculated on products which kolkhozes, sovkhozes and other agricultural enterprises and associations are paid for when they sell to the state farm products over and above the average level achieved in the 10th Five-Year Plan. The payment of these supplements is made by procurement organizations.

Councils of rayon agroindustrial associations must see that plans of organizational and technical measures to reduce the production cost of agricultural products and to increase the efficiency of agricultural production on farms operating at low profitability and at a loss are drafted and approved for the 1983-1985 period. Those plans, in order to create conditions for complete elimination of production of farm products at a loss should envisage specific measures to raise the level of management of cropping and animal husbandry, to increase crop yields and the productivity of livestock and poultry, and to strengthen the plant and equipment of those farms.

Oblispolkoms have been ordered to take up the question of the feasibility of intraoblast differentiation of purchase prices within the limits of the level assigned to the oblast and to make relevant recommendations if necessary to the UkSSR State Committee for Prices.

It should be emphasized that in the context of the differentiation of purchase prices of farm products, the introduction of supplements to those prices for farms operating at low profitability and at a loss, and the application of supplements and reductions for product grades, the finish of livestock and other quality indicators, calculations are becoming more complicated for products which agriculture sells to the state. In many cases the purchase price for one and the same product will now be different for farms in one and the same rayon. That is why it is very important for supervisory personnel and specialists of agricultural and procurement organizations and enterprises, in order to avert price violations in calculations for agricultural products delivered, study the price information and detail and introduce the necessary procedure in organizing the handling of price lists.

Thanks to the aid of the state rendered to agriculture in accordance with the decisions of the May (1982) Plenum of the CPSU Central Committee, all the necessary conditions are being created in this sector of the Soviet economy for operation without a loss and for fuller combination of the interests of all participants in the agroindustrial complex toward the goals of achieving the highest final results.

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AGRO-ECONOMICS AND ORGANIZATION

GOSPLAN COLLEGIUM DISCUSSION OF MEASURES TO CARRY OUT FOOD PROGRAM

Moscow PLANOVYE KHOZYAYSTVO in Russian No 4, Apr 83 pp 22-36

/Article: "On Measures for Implementing the Country's Food Program"/

/Text/ An expanded session of the Board of USSR Gosplan was held on 7 February. During this meeting, a discussion took place on measures for implementing the food program of the USSR. A speech was delivered during this meeting by member of the Politburo of the CPSU Central Committee and secretary of the CPSU Central Committee M.S. Gorbachev. The following individuals participated in the work of the Board: secretary of the CPSU Central Committee N.I. Ryzhkov, 1st secretary of the Central Committee of the Communist Party of Belorussia N.I. Slyun'kov, the president of the USSR Academy of Sciences A.P. Aleksandrov, USSR ministers, the presidents of VASKhNIL /All-Union Academy of Agricultural Sciences imeni V.I. Lenin/ and the Academy of Sciences for the Ukrainian SSR and also other leaders of ministries and departments and executives of Gosplan.

The chairman of USSR Gosplan N.K. Baybakov noted during his introductory remarks that a number of new problems are surfacing during the course of implementing the food program, especially in the sphere of introducing scientific-technical achievements, problems which must be solved in addition to implementing the measures adopted during the May (1982) Plenum of the CPSU Central Committee.

In light of the new questions and problems which have arisen, N.K. Baybakov stated that the task of this board consists of engaging in collective discussion and finding the means for solving them and developing additional measures for implementing the food program in keeping with the policies of USSR Gosplan and also those of the ministries and departments.

Reports were delivered on this subject by the USSR Ministry of Agriculture V.K. Mesyats, the president of the Ukrainian Academy of Sciences B.Ye. Paton and the chief of the Department of Agriculture and Procurements of USSR Gosplan N.T. Borchenko.

V.K. Mesyats reported on the specific measures being undertaken at the present time in the various areas in connection with implementing the decisions handed down during the May and November (1982) Plenums of the CPSU Central Committee,

with regard to the accelerated development of agriculture and the country's overall agroindustrial complex. The chief goal being set before the agricultural organs by the ministry -- to achieve more complete and efficient utilization of all of the internal reserves and the tremendous logistical potential created in agriculture. In the process, priority importance is being attached to the rapid introduction in all areas of scientifically sound farming systems. At the present time, such systems have been developed and approved in practically all republics, krays and oblasts and 1983 must become the year for their introduction into operations on a mass scale.

The experience of many kolkhozes and sovkhoses in all regions of the country convincingly reveals that in those areas where scientifically sound systems have been introduced into operations, unfavorable weather conditions are overcome with minimal losses and there are fewer fluctuations in the cropping power levels for the agricultural crops during dry and damp years.

What distinguishes a scientifically sound system of farming? First of all, such a system consists of efficient crop rotation plans and a well developed sowing area structure that is based upon local conditions and has the required areas of clean fallow, especially in the arid zones. It includes efficiently organized industrial seed production operations, the rapid movement of highly productive varieties and hybrids out onto the kolkhoz and sovkhos fields, the extensive use of an industrial technology for the cultivation of agricultural crops and the efficient use of reclaimed lands, mineral and organic fertilizers and equipment. It involves the mastering of anti-erosion soil cultivation work and the introduction of progressive forms for labor organization and wages. In other words, a scientific system of farming is an entire complex of measures which call for the creation of the most favorable conditions for raising the rates of development for and the stability of agricultural production in each oblast, each rayon and on each farm.

Further, V.K. Mesyats cited the indicators for developing the principal elements for these systems of farming. Thus, for the country as a whole, crop rotation plans have been introduced on 77 percent of the arable land. This cannot be viewed as satisfactory and thus more active work must be carried out in this regard.

Over the past 2-3 years, the structure of the areas under crops has changed for the better, although there is still a great amount of work to be carried out. Based upon developed systems of farming, the area of clean fallow must be increased to 20-22 million hectares throughout the country, or to 9 percent of the arable land, including in the arid climate zones -- up to 15-20 percent. By 1982 the fallow fields had already reached 18 million hectares. A chief concern now -- is that of ensuring that the fallow land in all areas is tilled, fertilized and cleansed of weeds in a timely manner and that it serves as repair fields for a crop rotation plan.

Although slowly, the sowings of pulse crops and alfalfa are nevertheless increasing. The areas being used for corn for grain are increasing gradually. The task has been assigned and a further expansion will take place in the sowings of corn for grain by means of more intense specialization at existing farms and the creation of new sovkhoses in Central Asia, the Ukraine and the north Caucasus.

A special program has been prepared for developing the production of rape. The plans for this year call for the areas assigned for this crop to be increased to 1.9 million hectares, including up to 345,000 hectares for grain purposes. This will provide a fine base for increasing the production of rape seed in the future.

The task of a scientifically sound system of farming is that of further raising the level of plant breeding work and improving seed production. A firm program is being followed aimed at converting seed production over to an industrial basis and accelerating the introduction of new and promising varieties. In 1982 the varieties of grain crops (less corn) which have been regionalized since 1976 occupied 25 million hectares or 20.2 percent of all sowings and in 1983 the plans call for this figure to be increased to 30 million hectares.

Included among the new varieties are the following: the short-stalk winter rye Chulpan; the promising varieties of durum winter wheat Kristall-2 and Parus, which surpass their analogues in terms of cropping power by 6-7 quintals; the spring wheat varieties Tselinnaya-2, Omskaya-9 and Khar'kovskaya-3. The plant breeders have been assigned the task of providing agriculture with early ripening and mid-season ripening corn hybrids having a growing season of 90-100 days. This will make it possible to expand the area of their cultivation by moving it further north. In the case of sunflowers, the principal trend here in seed production is that of shifting over to the use of hybrid seed. A specific program has been developed which calls for the sowings of hybrid sunflowers to be expanded to 465,000 hectares in 1983 and in 1985 -- to 1.1 million hectares. New varieties of beets having a high sugar content have been created and are being introduced into operations -- Veselopodolyanskaya-29, Uladovskaya-35, Yaltushkhovskaya-30 and Belotserkovskaya-34 -- which under production conditions furnish a sugar yield of 17-18 percent instead of 15-16 percent. A requirement exists at the present time for accumulating seed rapidly and undertaking measures aimed at introducing these varieties into production operations in a more speedy manner.

The plans call for substantial improvements in the varietal structure for potato production and in seed production for perennial grasses. Owing to the creation of specialized farms, the situation with regard to alfalfa seed is being corrected; in 1982, 5,000 more tons of seed were obtained for this valuable pulse crop than was the case in 1981.

At the same time, in individual rayons and oblasts the required amount of attention is still not being given to the problems concerned with the mass movement of new varieties and hybrids out onto the fields or to improving seed production work. This is why strain changing and strain renovation are being carried out slowly at a number of kolkhozes and sovkhoses and the sowing of non-regionalized and at times sub-standard seed is being tolerated. The USSR Ministry of Agriculture and its organs in the various areas are taking note of these shortcomings and they are imposing greater demands upon the farm leaders and specialists with regard to the status of affairs in seed production and in the future they will persistently strive to ensure that each hectare of arable land is sown using highly productive varieties of agricultural crops and produces maximum yields.

Mineral and organic fertilizers, as pointed out in the food program, represent a great reserve for increasing the production of grain and other agricultural products. The mineral fertilizer deliveries are increasing with each year of the five-year plan and this year the kolkhozes and sovkhozes are to be supplied with more than 22.8 million tons of mineral fertilizer. However, this amount is clearly not enough and thus a chief concern at the present time is that of raising the effectiveness of use of each kilogram of mineral fertilizer. As yet, the proper results are still not being obtained from them on many farms. This is borne out by data on their actual effectiveness compared to the norm for individual crops. Thus the increase in potato yield is 9 quintals of tubers per quintal of mineral fertilizer compared to 26 quintals according to the norms, respectively for vegetables -- 13 compared to 46 quintals, for sugar beets -- 11 compared to 23 quintals. At the same time, the effectiveness is raised considerably when the fertilizer is applied in behalf of grain crops -- up to 4.9 quintals compared to 4.4 according to the norms.

In this regard, the task is being assigned for achieving a more efficient distribution for the mineral fertilizers to be used for agricultural crops; the entire increase in the deliveries of such fertilizer is to be used in behalf of grain crops. In addition, a portion of the fertilizers allocated for sugar beets, potatoes and even cotton should ideally be made available and also applied in behalf of grain crops.

The liming of acid soils should be carried out on a more extensive scale in the nonchernozem zone. Only upon this condition will the fertilizers produce a full return. A substantial reserve for raising the effectiveness of mineral fertilizers is that of eliminating incidents of mismanagement and irresponsibility in the use of mineral fertilizers on the part of certain farm leaders and specialists. The entire service for the use of chemical processes in agriculture is aimed at achieving this goal. Full use is not being made of considerable reserves that are available in the form of organic fertilizers: approximately 100 million tons of farmyard manure remain on the farms annually, mainly owing to a shortage of the equipment required for loading and transporting the manure. An even more critical situation exists in the case of the machines needed for applying the organic fertilizers; this is having a very adverse effect on the harvest, on the uniform ripening of a crop and in the final analysis on the quality of the agricultural products. In a number of oblasts, only weak use is being made of peat as an organic fertilizer and insufficient attention is being given to the preparation of composts; proper attention must be given to eliminating these shortcomings. The recommendation by many oblasts in the nonchernozem zone concerning reducing and terminating the use of peat for fuel purposes here is deserving of support and an appropriated decision should be handed down as rapidly as possible.

An indispensable condition for further growth in field crop husbandry output is that of converting over to industrial technologies for the cultivation of agricultural crops in all areas, a process which began during the last five-year plan. It bears mentioning that over the past 4 years the scales for the cultivation of corn using an industrial technology increased from 18,000 to 2.7 million hectares. Last year, industrial technologies were employed for cultivation work as follows: sunflowers on an area of 632,000 hectares, sugar beets -- on 1.09 million, soybeans -- on 435,000, spinning flax -- on 114,000, potatoes -- on 89,000, tomatoes -- on 20,000 and onions -- on 10,000 hectares.

As a rule, the results were good. Thus the increase in corn yield in 1982 amounted to approximately 9 quintals per hectare, potatoes -- more than 40, sunflowers -- 5 and soybeans -- 4 quintals per hectare. However, in some rayons and oblasts the yields obtained from agricultural crops cultivated using an industrial technology were unjustifiably low.

The USSR Ministry of Agriculture believes that once all of the factors have been eliminated which are making it difficult to obtain programmed yields using the industrial technology, it will be possible to guarantee corn yields of not less than 50-60 quintals per hectare, sugar beets -- approximately 400-500, potatoes -- 250-300, vegetables -- 400-500 quintals per hectare. Active preparations are being carried out in this regard at the present time.

A most important component part of scientifically sound farming systems is a soil protective technology for cultivating lands in regions subject to wind and water erosion of the soil. It is required in practically all areas and its use produces an increase in grain yield of up to 2-3 quintals per hectare. At the present time, the soil-protective system of farming is being employed mainly in Kazakhstan, Siberia and the Volga region. In 1982, this system was used on 46 million hectares, compared to a requirement for roughly 100 million hectares. A conversion over to the soil-protective system of farming, taking into account the natural-climatic conditions of the country's zones, will make it possible to impart greater stability to agriculture in the production not only of grain but also of other field crop husbandry products. This requires an increase in the deliveries to the kolkhozes and sovkhozes of an entire complex of machines for working the fields in accordance with the soil-protective technology.

A substantial increase must take place in the return from reclaimed lands. There are many examples of their highly efficient use. However, by no means are the planned or so-called programmed yields being obtained from the irrigated tracts in all areas. The farm leaders and specialists in some regions are not supplying these lands with complete dosages of mineral or the required equipment, nor are they displaying concern for creating permanent specialized brigades and teams. All of this is lowering the effectiveness of irrigation farming. At the same time, the technical level of a number of reclamation systems under construction is not in keeping with the modern requirements. Very few automatic systems are being placed in operation, despite the fact that there is a shortage of machine operators. In the nonchernozem zone of the RSFSR, proper importance is not being attached to drainage and watering systems.

The experience of Moscow, Leningrad, Ryazan and other oblasts, where systems offering two-way control over the water regime are under construction, proves that this method ensures a high stability for agricultural production during years marked by unfavorable climatic conditions. In addition, the cropping power of vegetable crops, potatoes and perennial grasses is raised by 20-50 percent or more. This is why the USSR Ministry of Agriculture believes that in those areas where it is possible to do so a conversion should be carried out over to the more extensive introduction into operations or reclamation systems having two-way control over the water regime. The USSR Minvudkhov /Ministry of Land Reclamation and Water Resources/ must establish proper order

with regard to those reclamation systems which were built earlier. This is task number one for the reclamation specialists and it must not be postponed. The modernization of irrigation-drainage systems must take precedence over new construction. Another widespread shortcoming must be eliminated: the planning and construction of land reclamation projects without taking into account the social requirements of the rural areas. This matter must be taken under study by the USSR Minsel'khos /Ministry of Agriculture/, USSR Minvodkhoz /Ministry of Land Reclamation and Water Resources/ and USSR Gosplan.

Considerable improvements must be achieved in the utilization of the machine-tractor pool. Here there are many unsolved problems: the level of equipment operation is not very high, machine operator shortages persist in a number of rayons throughout the country and there have been incidents involving the premature writing off of machines. The USSR Minsel'khos, jointly with Goskomsel'khos'tekhnika, is undertaking measures and restoring order in these matters. Here a considerable amount of attention is being given to the construction of enclosed and outdoor platforms, garages for the storing of equipment, workshops and technical servicing stations for tractors. The level of support for these facilities is still inadequate. For the purpose of improving support for the machine-tractor pool in the rural areas in the form of repair enterprises, approximately 4 billion rubles of the overall volume of capital investments will be used for their construction during the 11th Five-Year Plan.

Many problems are associated with the introduction of progressive forms for organizing labor -- job contract plus bonus system of wages, brigade contract -- which make it possible to carry out field work rapidly and in a high quality manner and to coordinate more closely the work of collectives with the final production results. The experience of Nikolayev, Rostov and Belgorod Oblasts convincingly confirm the data of scientific institutes, which holds that subelements which operate on the basis of a collective contract and have at their disposal the same resources available to other brigades and teams produce 10-20 percent more output per unit of space and ensure growth in labor productivity on the order of 15-30 percent. This year 45,000 such brigades and teams have been created in field crop husbandry, compared to 32,000 in 1982 and in animal husbandry -- 80,000. Yet these numbers are insufficient and the USSR Minsel'khos will undertake measures aimed at achieving more widespread use of the progressive forms for organizing labor and wages.

Considerable reserves are available in the case of animal husbandry. The mainline path to be followed for improving this branch -- its rapid and decisive conversion over from an extensive to an intensive path of development. The greatest bottleneck in animal husbandry is the low productivity of the livestock. The raising of large-horned cattle until the moment they are turned over to the state in some republics (Kazakhstan, Azerbaijan and Moldavian SSR's) is dragged out for 30-35 months instead of 15-18 and that for hogs -- for 15-18 months instead of 9-10.

The productivity of animal husbandry is also adversely affected by a high degree of barrenness. Tremendous reserves for the production of animal husbandry products are embodied in the elimination of these and other shortcomings. But the chief factor restraining its growth is the lag in the

development of the feed base, since a shortage of coarse and succulent feeds leads to great expenditures of concentrated feed and grain.

At the present time, the leaders and specialists of agricultural enterprises must devote greater attention to the procurement of coarse and succulent feeds and ensure the efficient utilization of grain for feed purposes. This task must be solved mainly by improving the natural feed lands and raising their productivity. In a recently adopted decree concerning this problem, the plans call for an entire series of measures aimed at increasing the production of coarse, succulent and pasture feeds and reducing grain expenditures for livestock feed to the maximum possible degree. A fine start has already been made in carrying out this work. In 1982, 18 million more feed units of coarse and succulent feed were procured than in 1981 and this corresponded to 17 million tons of grain. In the interest of intensifying the production and procurements of coarse feeds, the plans call for the perennial grass areas to be increased to 29 million hectares in 1983, including 8 million hectares in alfalfa and up to 6.9 million hectares in clover.

An increase is called for in the production of pulse crops. In 1982 the gross yield of peas was substantially greater than the average for the past 3 years and this is making it possible this year to expand the area for this crop by 1.8-2 million hectares. One considerable reserve for increasing the amount of highly valuable feeds is that of procuring mixed silage. The experience accumulated last year in Voronezh, Kursk and Belgorod Oblasts revealed that in those areas where from 1.5 to 2 tons of mixed silage were procured per sow, the expenditures of concentrated feeds were lowered by 20-40 percent.

V.K. Mesyats emphasized that in solving the tasks concerned with further agricultural development a considerable role must be played by the implementation of scientific-technical programs developed for the 11th Five-Year Plan. Twenty five such plans have been approved for agriculture, including eight special purpose all-round programs and 17 for solving some of the more important scientific-technical problems of the branch. In addition, the USSR Ministry of Agriculture has developed and approved two scientific-technical programs for a departmental plan. The branch's scientific institutes are concentrating their chief attention and principal efforts on solving the special purpose and all-round programs concerned with increasing the production of grain, feed, animal husbandry products, rice and sugar beets; protecting the crops against pests and diseases; expanding the scales of use of plant growth regulators. The programs call for overcoming the bottlenecks in the breeding of the more important agricultural crops and species of animals, particularly in connection with raising their productivity and resistance against unfavorable conditions. The majority of the tasks called for in the programs for 1981-1982 were fulfilled, including the breeding of new varieties and hybrids of agricultural crops. A basically new achievement is the creation of short-stalk varieties of winter wheat and winter durum wheat, varieties which are not inferior to soft wheats in terms of productivity. Varieties of non-shattering peas, short-stalk rye and alfalfa with a high seed productivity have been bred for the first time in plant breeding practice.

Lines of highly productive large-horned cattle, hogs, sheep, goat strains and poultry hybrids have been created.

Methods are being developed for the biological protection of crops against pests and diseases, with consideration being given to protecting the environment. These methods have already been employed on an area in excess of 20 million hectares. Extensive work has been carried out in connection with protecting soils against erosion and improving soil fertility in various zones of the country. However, scientific solutions are still not being found for many important agricultural problems, particularly problems associated with raising the resistance of sowings of grain and other crops to unfavorable wintering conditions, improving the quality of the grain and raising the resistance of animals to the more dangerous diseases. It is along these lines that the efforts of scientific workers at VASKhNIL and the USSR Academy of Sciences must now be concentrated to the maximum possible degree. These problems were discussed during a recent joint meeting of the country's scientists.

Subsequently, V.K. Mesyats discussed those problems concerned with the correct distribution and use of capital investments in agriculture for the purpose of solving the food program and he noted that this work involves a number of shortcomings. The elimination of these shortcomings will promote an increase in the economic operational efficiency of the kolkhozes and sovkhozes, improvements in their economies and the creation of favorable conditions for expanded reproduction in agriculture.

The USSR Ministry of Agriculture and its organs in the various areas are undertaking measures to achieve more complete utilization of the conditions created as a result of implementation of the decisions handed down during the May and November Plenums of the Central Committee, decisions which had to do with improving the economic situation in agriculture, raising the procurement prices and the bonuses added on to them and writing off a portion of the kolkhoz and sovkhoz indebtedness. Special attention is being given to strengthening the economic training of personnel, introducing cost accounting principles in all areas and improving economic relationships between the enterprises and branches of the agroindustrial complex. The responsibility of all workers should be raised, especially that of kolkhoz and sovkhoz leaders, for achieving economies and thrift, increasing control over the activities of all farm subunits, lowering sharply the non-productive expenditures in agriculture and managing the farms on a profitable basis.

The new organs of agricultural administration -- agroindustrial associations -- created in the various areas in conformity with decisions handed down during the May Plenum of the CPSU Central Committee, must restore order in this work and search for and place in operation new reserves. The formation of these associations is nearing completion. As of today, 3,146 rayon associations and 157 oblast associations have been formed throughout the country. Their chief task at the present time is that of joining in the work of solving the problems associated with implementation of the food program as rapidly as possible.

In conclusion, V.K. Mesyats confronted USSR Gosplan with a number of problems. One of the chief directions to be followed for increasing the production of

agricultural products and raising its stability, in addition to achieving improved use of the mentioned reserves, is that of realizing steady growth in supplying the kolkhozes and sovkhoses with highly productive and reliable equipment. This will make it possible to carry out all work in a high quality manner and during the best agrotechnical periods. The speaker commented upon the insufficiently high technical level of certain agricultural machines and the low coefficient of technical readiness of the potato harvesting combines, harvesters and so forth. According to test data, the net operating time of the grain harvesting combines does not exceed 57 percent, compared to 75 percent as called for in the agrotechnical requirements. He directed attention to the need for satisfying more completely the rural requirements for mineral fertilizers, especially phosphorus fertilizers, through improved use of the existing capabilities for producing mineral fertilizers. The increasing requirements of the farms for herbicides must also be met.

Another unsolved problem -- creating a good logistical base for plant breeding and seed production, breeding work and satisfying the requirements of the scientific-research institutes and agricultural VUZ's, where the foundation is being established for future agricultural development and where agricultural personnel are being trained and educated. The question was also raised concerning the rapid organization of the production of small-scale agricultural equipment.

Academician B.Ye. Paton, in his report, emphasized that the implementation of the food program confronts the scientists with very important tasks. Over a period of many years, the Ukrainian Academy of Sciences has been carrying out basic and applied scientific studies, the results of which are of considerable importance to agriculture and its associated branches of industry.

In recent years the academy has continued to operate along these same lines. Thus the chemical scientists created a technology for the mono-dispersion of granulation of fertilizers, which makes it possible to produce 2 million tons annually. Granulated fertilizers possess a number of advantages over powdered forms: they do not cake during storage, they are convenient for applying to the soil and are spread uniformly upon it and, most important, they are consumed in a uniform manner by the plants, since they do not lend themselves to being washed away into water areas. A promising technology for obtaining by means of a converter defluorinated phosphate -- a fertilizer of prolonged action -- has been developed and introduced at a production association of Minkhimprom /Ministry of the Chemical Industry/. For all practical purposes, it does not wash out of the soil and its action lasts for several years. In addition, defluorinated phosphate can be used as a valuable feed additive in livestock rations. Thus the production volumes for this fertilizer should be expanded considerably as rapidly as possible. Based upon work carried out by Ukrainian scientists, a plant for the production of effective herbicides is being built at Fergana. Growth stimulators have been discovered for winter wheat, vegetable crops, sugar beets and also a preparation for combating the lodging of wheat. A technology has been implemented at a number of hothouse farms for applying a carbonic acid top dressing to plants and so forth.

The use of chemical means for preventing the lodging of crops, for example chlor-khaline-chloride (TUR), on winter wheat sowings will make it possible, according to data supplied by the UkSSR Academy of Sciences, to obtain up to 5 additional quintals of grain per hectare. The preparation has received

industrial approval for the forest district and the forest-steppe zone and has demonstrated a high level of effectiveness. In order to expand the use of chemical means for combating the lodging of grain crops, improvements must be carried out in the technology for producing this preparation and its production in the required amounts must be ensured.

In the area of field crop husbandry, the scientists of the Ukrainian Academy of Science are using both the classical methods of genetics and plant breeding, experimental mutagenesis and polyploidy and also the latest achievements of the molecular-biological science. This has made it possible to create new varieties of wheat, corn, rye and sugar beets (for example, the Kiyanka mutant variety of wheat, the corn hybrids Kollektivnyy-244 and Yubileynyy-60 and the fodder beet polyploid hybrids Kiyevskiy and Triploid-1). The Kiyanka variety of wheat is early ripening, highly productive, semi-dwarf, resistant to lodging and the shattering of grain and it is an intensive type having a raised (up to 14.4 percent) protein content and high bread baking qualities.

The Kollektivnyy-244 and Yubileynyy-60 corn hybrids, with a grain cropping power of roughly 75 quintals per hectare, surpassed the cropping power of the regionalized Bukovinskiy-3 hybrid by 14 percent. Feed varieties of Kiyevskiy-18, Kiyevskiy-216 and Pastbishchnyy-119 winter rape and Izumrudnaya and Vesnyanka wild cabbage, which possess a high cropping power in fodder are being introduced into operations. A new sugar beet variety -- IMV-51 -- has been created at the academy for the industrial cultivation technology; it is presently undergoing state strain testing. An experimental-industrial check carried out on it in Ternopol Oblast revealed that the cropping power for this variety was 42 quintals higher per hectare than that for other regionalized varieties.

At the present time, the microbiological synthesis of feed protein is playing a considerable role in the formation of full-value feed rations for animal husbandry. The republic's scientists have developed a technology for obtaining nutrient yeasts from the hydrolysis of the waste products of agricultural production -- rice and wheat straw, grapevine cuttings, sunflower stalks and the chaff of fibre crops. It has successfully passed experimental-production testing and at the present time modernization work is being carried out on the Nikolayev Hydrolysis-Yeast Plant and two new plants are being built; the mixed raw materials will be processed here; work is being completed on preparing the documentation for the construction of the Krymsk Hydrolysis-Yeast Plant, which utilizes grapevine cuttings.

The scientists have recommended a number of preparations for agricultural production for reducing losses in young livestock and poultry caused by diseases, including highly effective veterinary preparations, powder-type vaccines, the D-2 and D-3 vitamin preparations and others.

The academy's scientists developed a basically new technology for obtaining a liquid whole milk substitute for feeding to calves. It has already undergone experimental-industrial testing and been given a high evaluation by specialists of the USSR Minmyasomolprom /Ministry of the Meat and Dairy Industry/. A committee of the republic's Minmyasomolprom has recommended it for extensive introduction into operations throughout the Ukraine. For the country as a whole, this will make it possible to release approximately 5 million tons of milk for the country's population.

For the fishing economy, the scientists have recommended the use of new industrial methods for raising fish in warm ponds of power engineering installations, including atomic electric power stations. This will make it possible, using comparatively small pond areas, to raise considerable quantities of marketable fish, to employ concentrated mixed feed in an efficient manner, to mechanize and automate the issuing of this feed and to extend the period of active growth in the valuable food types of fish. The basis for this method is the use of fish pond farms in which it is possible to raise practically all of the food types of fish with relatively few expenditures for their creation. The overall fish productivity of the ponds -- cooling ponds of TETs /heat and electric power plant/ and atomic power stations located in the Ukraine -- increased by a factor of 8 over the past 5 years and amounted to more than 70,000 tons of fish in 1982 -- more than 7 percent of the overall catch from the republic's internal water areas. Great potential is embodied in utilization of the biological resources of the oceans. Here we have in mind the food proteins of products of the sea, particularly mussels and also hydrogeological feed production (seaweed, invertebrates and so forth). The problems concerned with the utilization of these resources are being handled by the academy's Southern Scientific Center in collaboration with the USSR Minrybkhov /Ministry of the Fish Industry/. In 1985 the plans call for an increase of 200,000 tons in the procurements of biological resources from the southern seas. A considerable portion of this increase can be obtained through the creation of marine farms for the raising of mussels.

The republic's academy is constantly devoting attention to solving the problem of combating losses and protecting that which has already been produced. Tests are being carried out on new chemical agents, particularly carboammonia salts, for the extended storage of forage grain having a raised moisture content. Preservation work carried out in this manner makes it possible to protect grain (including corn) for a period of 8-10 months and to improve its nutritional properties by means of nitrogen enrichment. Goskspertiza of USSR Gosplan examined this problem and recommended that the method be introduced into operations on an extensive scale.

The active membership of the academy has unique solutions for reducing sugar losses in sugar beet production which make it possible, to a certain degree, to solve this serious problem. The high preservation capabilities of carboammonia salts forms the basis for a new technology for the extended storage of sugar beets, the use of which is making it possible to reduce sugar losses in beets by 15-20 percent.

Another promising development which is undergoing industrial testing at the present time at a sugar plant in Kiev Oblast -- the so-called hydrothermal technology for processing sugar beets in sugar containing powders. With its introduction it will become possible to shorten the sugar refining season and hence to reduce the direct losses of sugar.

A technology for obtaining fruit powders through the use of fruit residues and sub-standard fruit is highly efficient. It makes it possible to convert this raw material into a full-value product, one which can be used as a sugar substitute in the food industry. At the present time, 30 technological lines in the Ukraine, the RSFSR, Krasnodar Kray, Uzbekistan, Azerbaijan, Georgia and Moldavia are being operated on the basis of this technology.

The plans for the 11th Five-Year Plan call for the creation of hundreds of such technological lines.

An important means for covering the protein deficit, one which is being employed in a number of food industry production operations, is that of making more complete use of the products of beef cattle husbandry. In particular, a new technology for purifying the blood of slaughtered animals has been proposed. The dry protein mixture obtained from it is used as a substitute for an egg mixture used at meat combines in the manufacture of sausages and meat pies and also in the production of bakery, confectionery and macaroni products. Several of the republic's meat combines have already mastered this technology.

One extremely effective means for reducing losses in fruit and vegetable products during their prolonged storage is that of using protective controlled gas mediums. A recirculation generator has been created at the academy, the use of which in fruit and vegetable storehouses extends the storage period for fruit (for example, up to 8-9 months in the case of apples) while reducing natural losses and retaining the nutritional, taste and marketable properties. A nitrogen system for the cooling and storing of agricultural products also warrants use on an extensive scale.

The institutes of the UkSSR Academy of Sciences are developing in a purposeful manner methods for raising the reliability and durability of agricultural machines. A new technological process has been created for the mechanized arc welding of cast iron using so-called self-protective PANCH-11 wire. This welding makes it possible to increase by 70-80 percent the service life of housing and basic cast iron parts for motor vehicle, tractor and combine engines. The use of this method at enterprises of Goskomsel'khoshtekhnika in a number of union republics is expected to produce good economic results.

Powder metallurgy is opening up great opportunities for agricultural machine building. Collaboration in this area between scientists and production workers is producing fine results. At the present time, the UkSSR Academy of Sciences, jointly with USSR Goskomsel'khoshtekhnika, has developed a comprehensive program of work for developing gas-thermal powder spraying and electric-arc and plasma surfacing of metal on the parts of machines and mechanisms at enterprises of this branch.

During the course of discussing this problem, the need was recognized for employing this method not only for the restoration of worn out parts but also for productive surfacing during the production of new parts at plants of agricultural machine building and the motor vehicle industry.

In close collaboration with workers of Ukproyektstal'konstruktsiya, Ukrproyekt, Ukrmezhkolkhozstroy, the Kiev Construction Institute and the Kiev Institute of Electric Welding, steel structures have been developed for various types of agricultural facilities, for use instead of heavy reinforced concrete. In the process the consumption of cement is reduced by a factor of 10, steel -- by 10-12 percent, conventional fuel -- by twofold, the weight of the installations -- by a factor of seven and, in addition, transport expenditures are reduced substantially.

At the academy, serious attention is being given to solving the problems of the agroindustrial complex.

In his report, N.T. Borchenko noted that the task of achieving greater stability in the production of agricultural products is one of the principal problems of agricultural development. Actually, the natural-climatic conditions in our country are diverse and in many regions unfavorable for the carrying out of agricultural work. Extreme climate irregularities occur periodically over large territories, such as droughts, shallow rivers, severe winter frosts and so forth. Of these, droughts constitute the greatest evil. According to data supplied by Goskomgidromet, droughts occur on the order of 2-3 times each decade and yet recently they have been taking place on a more frequent basis. The last 4 years (1979, 1980, 1981 and 1982) were arid years to a certain degree and thus in agriculture, and it follows in the country's national economy as well, great difficulties arose.

The speaker pointed out the fluctuations in the gross grain yields during these years. However, feed production and the volumes of feed procurements were marked by considerably less fluctuations (both relatively and absolutely) as a result of better territorial distribution of the crops in keeping with their biological characteristics. Consequently, without reducing the amount of attention being given to the grain economy, considerable reliance must now be placed upon sharply increasing the production of coarse, succulent and green feeds, so as to create a more stable feed base for animal husbandry and, it follows, for agriculture as a whole. This conclusion is confirmed by the operational experience of 1982. The fact that 40 million more tons of silage and root crops were procured for the winter made it possible to carry out this year's livestock wintering campaign at a higher level and to increase the production of milk by 16 percent, eggs -- by 6 percent and also meat.

Subsequently, N.T. Borchenko commented upon the dependence of cropping power upon the quantities of fertilizers applied and upon a number of other production factors, using as an example the extensive network of state strain testing stations operating in practically all of the country's natural-climatic zones. During the 10th Five-Year Plan, the average annual cropping power for grain crops at such stations amounted to approximately 30 quintals, that is, 14 quintals higher than at kolkhozes and sovkhozes. This resulted from the fact that 10 quintals (in conventional units) of mineral fertilizer and 4.5 tons of organic fertilizer were applied to each hectare of grain crop sowing. These figures are greater than the averages for the country by factors of 4.6 and 2.3 respectively. Science has proven that 50-60 percent of an increase in grain crop yield results from an increase in the dosages of mineral fertilizer applied. In addition to the fertilizers, the yields are also affected by other factors: reduction in losses, introduction of new varieties, development of crop rotation plans, conversion over to a progressive cultivation technology and so forth. All of these factors directly influence the cropping power and, it follows, the gross yields. They are all inputs for increasing production and raising its stability.

The speaker underscored factors which will ensure growth in grain production during the 12th Five-Year Plan. In conformity with the food program, the average annual yield of grain must increase by 45-50 million tons compared to

the level for the 10th Five-Year Plan, including more than 27 million tons or approximately 55 percent -- as a result of having increased the dosages of mineral fertilizer applied in behalf of the grain crops. And since there is a shortage of mineral fertilizers, a certain redistribution of them by crops must be carried out. At the same time, it will be necessary to increase further the production of fertilizers, especially phosphorus fertilizers. According to data provided by A.I. Barayev, an application of 50 kg of granulated superphosphate per hectare produces an increase of 2-3 quintals of grain. Importance is attached to the fact that phosphorus fertilizers accelerate the ripening and raise the resistance of plants to unfavorable climatic conditions.

N.T. Borchenko paused to discuss the problems of feed production and he pointed out that in addition to accelerating the development of grain production measures must also be undertaken to increase the growth in feed production in those areas where it is most stable. This requires equipment and particularly KSK-100 and E-280 feed harvesting combines, which have proven their worth. For partially offsetting the shortage in these machines, the production of the YaSK-170 Yaroslavets feed harvesting combine can be expanded (by means of cooperation). Tests carried out in the nonchernozem zone have proven that this is also a fine feed harvesting combine.

Subsequently the speaker noted that the production of metal containers for elevators has been organized within the USSR Ministry of Procurements system. Obviously, this can serve as the basis for establishing the production of metal storehouses for kolkhozes and sovkhozes. With the conversion of construction operations over from the use of reinforced concrete to metal, it will be possible to obtain the same container volumes. This will accelerate the construction of granaries and ensure a reduction in grain losses. A review must also be undertaken of the problem of establishing the production of completely prefabricated plant-produced storehouses made out of light metal structures and having a controlled microclimate for fruit and vegetable products and potatoes.

L.I. Khitrin -- chairman of USSR Goskomsel'khoshtekhnika -- directed attention to the importance of ensuring complete deliveries of equipment to the rural areas, especially for feed production and corn cultivation using an industrial technology. Shortages in some machines, for example a unit (APZh-12) for preparing herbicide solutions, preclude the possibility of carrying out operations on the basis of an industrial technology and as part of an overall complex. The speaker submitted a request to USSR Gosplan asking it to discuss the possibility of eliminating these bottlenecks in staffing the machine-tractor pool. He subsequently stated that Goskomsel'khoshtekhnika is undertaking measures aimed at organizing the restoration of worn out parts. However, there is a small group of spare parts which is also in short supply and yet no additional production has as yet been organized for them.

The chairman of Goskomgidromet, Yu.A. Izrael', furnished analytical data on climatic conditions in the USSR over the past 100 years (see Table on following page).

He emphasized that the weather and climate have their own particular peculiarities -- changes can take place for better or worse at any time and

they can occur from year to year or during the course of a year's time. This certainly affects the operations of all branches of the national economy and especially agriculture.

Character of Drought	Reduction in Cropping Power of Grain Crops, in %	Recurrence of Drought, once...	Year
Exceptionally severe	30-40	every 100 years	1975
Severe	20-30	every 10-15 years	1963, 1965, 1981
Strong	10-20	every 5-7 years	1954, 1955, 1957, 1967, 1972, 1979 and 1980
Average	5-7	every 4 years	1951, 1964, 1969, 1974 and 1982

Weather changes by territory take place in the form of waves: European part of our country -- the Urals and Kazakhstan -- western Siberia -- eastern Siberia. If a drought occurs on the European territory, then as a rule favorable weather conditions prevail in Kazakhstan. Thus, in connection with the organization of agriculture for a country such as ours, grain production for example should not be concentrated only in the European part or only in Kazakhstan. This would be wrong from the standpoint of the climatic conditions. Changes in the weather conditions must be forecast and taken into account in connection with the economic activities.

It is impossible to forecast changes in climate by five-year plans or decades, since the ability to predict weather phenomena is still low.

The Minister of Tractor and Agricultural Machine Building, A.A. Yezhevskiy, reported that considerable organizational restructuring of the branch is being carried out at the present time: measures are being developed for the modernization of enterprises, scientific-technical centers, design and technological bases and so forth.

However the branch requires improvements in support in the form of effective, progressive and high quality materials -- glass-fibre-reinforced plastics, triple-layer and double-layer steels, packing gaskets and others. In this regard, a review should be carried out of the branch's priority with regard to the distribution of high quality and effective materials.

The pool of machines being produced requires replacements. Today 40 percent of the machines are obsolete. For example, the Volgograd Tractor Plant has been producing the same model for 22 years. The production of a new model requires changes in the equipment, technology, equipment and so forth. Thus priority attention must be given to those problems concerned with ensuring that the branch is given the proper support. Large capital investments are being

allocated for the branch. During the May (1982) Plenum of the CPSU Central Committee, construction projects of the agroindustrial complex were declared to be projects of special state importance. Priority is attached to assigning the limits for contractual work for these projects.

P.A. Polad-Zade -- USSR Deputy Minister of Land Reclamation and Water Resources -- expressed agreement with the thoughts expressed in the reports by V.K. Mesyats and N.T. Borchenko, concerning the fact that the most important problem in agriculture is that of improving the utilization of the existing fund of reclaimed land.

During a meeting of the Board of the USSR Minvodkhoz /Ministry of Land Reclamation and Water Resources/, a detailed discussion was held on measures for raising the productivity of the existing and tremendous fund of reclaimed lands. In the future, USSR Minvodkhoz will concern itself mainly with modernization of the reclaimed lands (at the present time, the plans for modernization are systematically being over-fulfilled from one five-year plan to another and from year to year). A chief concern in such modernization -- the desalinization of lands and combating secondary salinization of them. Recommendations are being prepared on this question by Minvodkhoz. In the report by V.K. Mesyats, mention was made of a program for increasing the sowings of corn and yet this is a minimal program. In principle, the areas used for corn for grain can and must be increased to 20 million hectares by means of irrigation. Certainly, large capital investments are required in order to accomplish this.

Subsequently, P.A. Polad-Zade stated that of 17-18 million hectares of irrigated lands in the country, approximately 8 million hectares or 41 percent are being watered by means of sprinkling. But the fact of the matter is that, notwithstanding the creation of the best sprinkling machines in the world, such as the Fregat and Kuban' machines, the principal area is still being watered by obsolete and low productivity machines which require large numbers of service personnel and which ensure a very low quality of irrigation. Thus it will be necessary to expand substantially the production of new sprinkling machines.

Measures have been developed by the ministry for expanding the use of polymers in land reclamation construction work, especially for the purpose of drainage. This is bringing about sharp improvements in the work of draining and modernizing irrigated lands and it is raising labor productivity. However the quantities of polymers are limited.

The director of the Institute of Machine Science of the USSR Academy of Sciences, K.V. Frolov, noted that in addition to raising the reliability of the equipment, as mentioned in the speech by A.A. Yezhevskiy, a requirement also exists for raising the culture of its operation. Moreover, this applies not only to agricultural equipment but to all equipment generally. This requires the organization first of all of feedback between the plant-producer and those who operate the equipment. The plant-producer must supply definite types of documentation with the products produced and those who operate the equipment must maintain a record of troubles encountered.

The task of raising the reliability of the agricultural equipment is certainly a realistic one. At plants (for example, ZIL /Moscow Automobile Plant imeni I.A. Likhachev/), use is already being made of laser and mono-plasma processing of parts and this is raising their quality considerably. At the present time, our institute is carrying out a great amount of work in connection with creating new lines and technologies at a plant in Rostov-na-Donu for the production of the DON-1500 combine. The institute's scientists are prepared to triple their forces for the purpose of providing assistance in organizing the laser, plasma and ultra-sound processing technology, a very interesting and promising technology. Methods have been found for raising the kpd /efficiency factor/ of ultra-sound machines by roughly 47-50 times.

K.B. Frolov reported that he will present USSR Gosplan with the institute's recommendations for raising the reliability of the agricultural equipment.

A.I. Manokhin -- director of TsNII Chermet /Central Scientific Research Institute of Ferrous Metallurgy imeni I.P. Bardin/ -- noted that many high-phosphorus ores are to be found in the Soviet Union and that only one plant -- Azovstal' -- produces fertilizers from them. Hence, full use is not being made of the considerable opportunities that are available for increasing the production of phosphorus fertilizers. The institute will present recommendations to USSR Gosplan on this matter.

N.K. Baybakov spoke towards the end of the meeting. He discussed problems concerned with searching for and utilizing reserves for increasing the production of agricultural products and he noted that attention should be given to introducing all scientific-technical achievements available in the national economy and ensuring that they are utilized to the maximum possible degree for solving the food program.

It was emphasized in this regard that the USSR Ministry of Agriculture must achieve a further increase in the level of management for the development of the agricultural science and an acceleration in the introduction of scientific and engineering achievements into production based upon a general dissemination of scientifically sound farming systems, the mastering of accepted crop rotation plans and improvements in the structure of the area under crops in order to ensure a stable increase in production, particularly grain and feed; an intensification in breeding work and seed production for the purpose of accelerating the creation and introduction of promising varieties and hybrids for grain crops, sunflowers, sugar beets, potatoes and other crops; raising the effectiveness of use of mineral and organic fertilizers and irrigated and drained lands; accelerating the conversion of animal husbandry over to an intensive path of development; improving the organization of labor at kolkhozes and sovkhozes, with wages based upon final results.

Having taken note of the great amount of work carried out in the Academy of Sciences for the Ukrainian SSR in connection with working out the more important fundamental and applied problems of the country's agroindustrial complex, N.K. Baybakov considered it advisable to accelerate the introduction of the achievements of Ukrainian scientists on an extensive scale, as set forth in the report by the president of the UkSSR Academy of Sciences, Academician B.Ye. Paton.

H.K. Baybakov emphasized that the members of the board and the heads of departments of USSR Gosplan, when developing the draft plans for 1984-1985 and the 12th Five-Year Plan, must take into account the comments and recommendations made during the meeting of the board and call for additional measures for implementing the food program based upon the use of scientific-technical achievements in agriculture. Jointly with USSR Minsel'khoz, Minsel'khoz mash Ministry of Tractor and Agricultural Machine Building, USSR Goskomsel'khoz tekhnika and interested ministries and departments, the appropriate departments must examine an entire series of problems and prepare recommendations, particularly with regard to: ensuring the availability of the machines required for introducing into operations the industrial technology for the production of agricultural crops and the soil-protective system of farming; producing small-scale and plant breeding equipment and organizing the production of metal grain storehouses for kolkhozes, sovkhozes and inter-farm enterprises; increasing the restoration of metal-intensive worn out parts for tractors, agricultural machines and motor vehicles, using modern methods and bearing in mind a possible reduction in the deliveries of new spare parts; raising the effectiveness of use of reclaimed lands.

The following problems also warrant attention: ensuring that agriculture is supplied more completely with phosphorus fertilizers and the raw materials for producing them and that extensive use is made of phosphoslugs and phosphogypsums as fertilizers and chemical ameliorants for solonchaks soils; organizing the production of defluorinated phosphate and chemical preparations for combating the lodging of wheat, rye and other crops; increasing the production of mineral feeds, vitamins, antibiotics, veterinary preparations and other means, bearing in mind the need for satisfying the animal husbandry requirements for these materials in future years; reducing considerably the use of peat for fuel purposes such that it can be used only for fertilizing the fields; using deciduous strains of wood (aspen) as feed for large-horned cattle; the production and use of a whole milk substitute developed by the USSR Academy of Sciences for feeding to calves; the preservation of sugar beet roots using carbammonia salts, the processing of these roots using a hydro-technical technology and also obtaining powders from fruit residues and sub-standard fruit.

N.K. Baybakov also pointed out that sufficient studies have been carried out on the use of a magnesium type of water for the watering of various agricultural crops. The data obtained reveals a substantial increase in crop yields as a result of the use of this water. In this regard, he has recommended that the USSR Minvodkhoz carry out an extensive check on the use of magnesium water for the desalinization of soils and thereafter to submit its recommendations.

USSR Minsel'khoz, USSR Minvodkhoz, USSR Minplodoovoshchikhoz Ministry of the Fruit and Vegetable Industry and USSR Goskomsel'khoz tekhnika were directed to focus attention on the need for intensifying control over the carrying out of the principal tasks of the special purpose comprehensive scientific-technical programs and tasks of the state plan for the section entitled "The Development of Science and Engineering."

The Board of USSR Gosplan handed down a detailed decision concerning the problem under discussion.

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AGRO-ECONOMICS AND ORGANIZATION

GOSBANK CREDIT TERMS FOR UZBEK INDUSTRIAL SUBSIDIARY FARMS

Tashkent EKONOMIKA I ZHIZN' in Russian No 2, Feb 83 p 58

[Article by B. Nayev, division chief in the economic planning administration of the Uzbek Republic Office of Gosbank USSR: "Subsidiary Farming and Gosbank"]

[Text] Subsidiary farms at industrial enterprises and trade, construction, transportation, budget, and other organizations and institutions have received a substantial development in our republic.

When these farms are organized numerous questions arise concerning the procedure for giving them legal status, the opening of an account in the bank, the financial sources for their creation and development, and so forth. Certain enterprises and organizations request credit from Gosbank institutions without having done sufficient work on the entire complex of questions connected with the creation of the subsidiary farms and the development of their material and technical base. As a result of this, there is a necessity to describe the basic principles of the relationships between Gosbank institutions and the subsidiary farms.

The Decree of the CPSU Central Committee and USSR Council of Ministers, "On the Subsidiary Farms of Enterprises, Organizations, and Institutions," gives ministries and departments the right to create subsidiary farms. A current account in Gosbank is opened for farms which are on cost accounting and which have an independent balance upon the presentation of a creation document (a copy of a ministry's order), a copy of an approved charter (regulation), and other documents required by the bank for the opening of accounts.

Enterprises which are on cost accounting, and also budget organizations and institutions which have special resources from their subsidiary farms may obtain long-term credit (up to six years) for expenditures connected with the organization and expansion of the material and technical base of the subsidiary farms. The credit is repaid on the basis of the additional accumulations obtained as a result of the realization of the credited measures. The monies for the repayment of credit have to be provided for by enterprises which are on cost accounting in their financial plans, and by budget organizations and institutions--in the estimates for special (extra-budgetary) resources.

Long-term credit may also be extended for the organization of subsidiary farms on a share basis. In this case, the borrower may be one of the share-holder enterprises planning the construction. This enterprise is the single client for planning and construction. In order to obtain a loan the ministries and departments to which the share-holder enterprises are subordinate direct a general petition to the board of Gosbank USSR. The petition specifies the single client, and also the one to whom the subsidiary farm will be subordinate, whether it will operate on cost accounting principles or will enter into one of the share-holder enterprises, and their participation is defined in labor, material, and financial resources in the construction and operation of the farm, and in the distribution of its output. At the same time, the client has to prepare the documents necessary for the writing up of credit (planning estimates, calculations of credit repayment periods, work schedule, contracting agreement), and also the agreement which has been concluded with the other participants in the creation of the farm.

Subsidiary farms which are on cost accounting and which have an independent balance, and enterprises and organizations which have subsidiary farms on their balance may be extended short-term credit for cropping and animal husbandry expenditures, above-normative remainders of feed, young livestock and livestock being fattened, and other physical assets. A necessary condition for obtaining such credit is the existence of circulating capital normatives for the pertinent items.

As a rule, credit is not extended to subsidiary farms for the purchase of cattle, poultry, and rabbits. These operations have to be performed with their own resources which have been allocated for these purposes in a cash-free procedure. Cattle, poultry, and rabbits have to be purchased in compliance with the established state procurement prices.

Short-term credit is not given by Gosbank to the subsidiary farms of budget institutions.

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AGRO-ECONOMICS AND ORGANIZATION

PRICING SYSTEM, FINANCIAL CONDITION OF KAZAKH KOLKHOZES, SOVKHOZES

Alma-Ata KAZAKHSTANSKAYA PRAVDA in Russian 4 Mar 83 p 2

/Article by V. Grigoruk, deputy director for scientific work of the Kazakh Scientific Research Institute of Economics and Agricultural Organization and candidate of economic sciences: "Strengthening the Rural Economy"/

/Text During the May and November (1982) Plenums of the CPSU Central Committee, emphasis was placed upon the need for further improving the forms and methods for agricultural administration and planning, strengthening cost accounting practices and creating the economic conditions required for stable sovkhos and kolkhoz profitability.

A complex of measures is presently being carried out aimed at improving the administrative mechanism and strengthening the branch's economy. In particular, since 1 January 1983 the procurement prices for the principal types of agricultural products have been raised and bonuses have been introduced for adding to the prices for low profitability and unprofitable sovkhoses and kolkhozes. Financing from the state budget has been opened up for those kolkhozes which lack the required internal capital. A considerable portion of the loan indebtedness of farms has been written off and the schedules for making repayment to Gosbank have been postponed.

The economic situation in the branch can be analyzed using Kazakhstan as an example. During the years of the 7th Five-Year Plan, the republic's sovkhoses sustained losses in their economic activities amounting to more than 2 million rubles. Following the March (1965) Plenum of the party's Central Committee, at which time large-scale measures were carried out aimed at strengthening the sovkhos and kolkhoz economies and cost accounting practices, a majority of the agricultural products became profitable and the sovkhos profits during the years of the 8th and 9th Five-Year Plans amounted to 372 million rubles. During the 10th Five-Year Plan, the economic status of agricultural enterprises deteriorated considerably.

What caused this situation to develop? First of all there was the unsatisfactory fulfillment of the production plan for gross agricultural output. During the 10th Five-Year Plan it was underfulfilled by 6 percent at sovkhoses throughout the republic. Secondly -- the planned production expenditures were excessive. The excess amounted to 26 percent. They were particularly high in Pavlodar, Semipalatinsk, Taldy-Kurgan and Dzhezkazgan Oblasts.

A reduction in the internal capital available at the sovkhozes and kolkhozes, obtained mainly by means of profits, led to considerable growth in borrowed and budgetary resources and to farm indebtedness in the form of Gosbank loans. Thus, during the May Plenum of the CPSU Central Committee the decision was made to write off a portion of the sovkhoz and kolkhoz debts and to defer loan payments by 10 years. This will undoubtedly have a positive effect on the rural economy. However, this measure is of a temporary and one-time nature. Measures are obviously required for improving the financial-credit relationships of the sovkhozes with Gosbank. Actually, it requires a definite payment from the sovkhozes for the use of credit and the sovkhoz money, which accumulates in the bank, is not viewed as a deposit and thus does not draw interest.

At the present time, special importance is being attached to the correct and economically sound development of a system of prices for the means of production and production services provided for agriculture on the one hand and for the procurement prices for agricultural products on the other. This is required for proportionality in the development of agriculture and industry, for equivalent commodity exchange and for strengthening the cost accounting relationships of kolkhozes and sovkhozes.

The last regulation of procurement prices was carried out 1 year ago. In connection with the introduction of unified plans for state procurements and for the purpose of retaining the existing average level of state payments for products sold by the farms, bonuses which were paid earlier for above-plan sales are included in the prices for these products. Such an incentive system offers definite advantages. It prevents a reduction in the production and sales volumes for agricultural products compared to the previous period.

As a result of the measures undertaken, the sovkhozes and kolkhozes are presently selling their products at higher prices. For the republic as a whole, the average sales price for grain increased during the 10th Five-Year Plan by 26 percent compared to the 8th Five-Year Plan, milk -- by 72, meat of large-horned cattle -- by 25, mutton -- by 41, poultry -- by 51, wool -- by 21 and karakul pelts -- by 76 percent. This reflected not only an increase in the price list but also in the work carried out by the farms aimed at improving the quality of the products.

However, notwithstanding this increase in prices, the profitability of the agricultural products increased only negligibly and that for some products even decreased. This is explained by greater growth in production costs compared to the sales prices. The increased costs for the production of meat, wool, karakul pelts and sugar beets were especially noticeable. Thus, in Kazakhstan, the increase in prices called for in conformity with the decisions handed down during the May Plenum of the party's Central Committee must be directed towards stimulating the production of these products in particular.

At the present time, the cost to the state for certain food products (especially meat products) is considerably greater than the retail price and this raises the need for large budgetary subsidies. The production costs for the products must be lowered in order to stabilize the prices. But, as is well known, this is dependent not so much upon the operational results of

agriculture, but rather upon those branches of industry which are responsible for supplying it with the means of production.

In improving the financial status of sovkhoses, a definite role must be played by improvements in the economic relationships of agriculture with those branches which process and procure its products and also which provide services for the sovkhoses and kolkhoses. At the present time, they are operating under more favorable economic conditions than agriculture. During the 10th Five-Year Plan, the profits of enterprises and organizations of five ministries and departments in the republic which are associated with providing services for agriculture and processing its products exceeded the profits of all of the sovkhoses and kolkhoses by a factor of 6.7 and amounted to 3,261,000,000 rubles. Agriculture, as is well known, produces more than one third of the national income and yet in the distribution of profits its share is negligible. Thus the economic mechanism of the agroindustrial complex in the republic must be oriented towards an equivalent distribution of income in conformity with the real contribution made by each participant in the APK /agroindustrial complex/.

The successful functioning of the new organs of administration in the rayons and oblasts -- the agroindustrial associations -- will be dependent upon the interest displayed by the partners in achieving high production results. They must bear responsibility for these results to an equal degree.

Up until recently, each partner in an association planned its own final result. Thus the interests of the service organizations and enterprises were in conflict with the interests of the sovkhoses and kolkhoses.

The system of wages and awarding bonuses to workers and specialists attached to associations must be based upon the same criteria as those employed for sovkhoses. Only then will it promote the achievement of high final results. Up until now, the situation has been quite different. The economic relationships between the sovkhoses, kolkhoses and their service organizations were not always mutually advantageous. Thus the level of profitability for agrochemical servicing work in 1981 was 28.2 percent, whereas it should not have exceeded 10 percent.

What caused this inflated level of profitability? First of all it derived from inflated rates for services, from the work volumes and from the carrying out of more profitable types of work. Thus, for all practical purposes, a poorly controlled transfer of kolkhoz and sovkhos monetary resources to other branches of the national economy took place.

In the decisions handed down during the May Plenum of the CPSU Central Committee, the plans called for a change in the system for awarding bonuses to workers and specialists attached to rayon enterprises and organizations of Goskomsel'khoz-tekhnika, Soyuzsel'khozkhimiya, aquicultural and operational organizations, the USSR Ministry of Land Reclamation and Water Management and other enterprises and organizations included in agroindustrial associations. It was established that the issuing of bonuses to workers attached to these departments, based upon the annual results, is carried out for an increase in the production of agricultural products and in the profits at sovkhoses and kolkhoses which received services, compared to the level achieved over the preceding 5 years.

This forces all partners belonging to an agroindustrial association to work in the same direction.

The measures undertaken by the party aimed at improving the economic mechanism and strengthening the kolkhoz and sovkhoz economies must ensure the successful carrying out of the country's food program.

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INTEGRATION OF PRIVATE PLOTS WITH APK STRUCTURE DISCUSSED

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[Text] In investigating the national economic agro-industrial complex that is being formed, special attention is devoted to its branch structure. The socio-economic structure of the complex is considerably less studied. In economic literature they usually discuss the need to observe branch and inter-branch proportions within the framework of the national economic agro-industrial complex (NAPK). Undoubtedly, this is a large and important task. But one must not underestimate the significance of establishing correct ratios among units of the APK with respect to forms of property either. Frequently with such an analysis of the NAPK the socio-economic structure of its second block, which embraces agriculture, is regarded as consisting only of state and cooperative agricultural enterprises. Individual production, which provides for a significant proportion of the gross agricultural product, is ignored. As a result, the division of labor between public and private farms, their interdependency and their production ties are not disclosed, that is, the analysis is essentially not comprehensive in nature. Yet such comprehensiveness in the study of the tendencies and prospects for the development of the NAPK is especially important under current conditions, when the USSR Food Program for the period up to 1990, which was adopted by the May (1982) Plenum of the CPSU Central Committee, is being implemented. The Food Program particularly set the task of extensively utilizing the capabilities of private subsidiary farms of the citizens and collective orchard raising and gardening.* Speaking at the November (1982) Plenum of the CPSU Central Committee, General Secretary of the CPSU Central Committee, Comrade Yu. V. Andropov also noted that concern for the development of private subsidiary farms is justified.**

With the expansion and deepening of interfarm and agro-industrial cooperation and integration in all socialist countries, there arises the question of the relationship with this process of the development of the private subsidiary farm (henceforth--LPKh), which in the European CEMA countries provide from 13 to 35 percent of the gross agricultural output.

* See "The USSR Food Program for the Period up to 1990 and Measures for Its Implementation," "Materialy mayskogo Plenuma TsK KPSS 1982 goda" [Materials of the May 1982 Plenum of the CPSU Central Committee], Moscow, 1982, p 32.

**See "Materialy Plenuma Tsentral'nogo Komiteta KPSS 22 noyabrya 1982 goda" [Materials of the Plenum of the CPSU Central Committee of 22 November 1982], Moscow, 1982, p 12.

In those branches where technical equipment and systems of machines are developed, concentration and specialization of production on large socialist farms proceed more rapidly, clearly demonstrating the great advantages of large-scale production, revolutionizing its nature and technology and, on the basis of industrialization of agriculture and the changeover of agricultural labor to industrial methods, providing for much greater productivity of collective labor as compared to individual labor (for example, in grain production, poultry raising and so forth).

But in those branches where for a relatively long period of time the conditions for production and labor changed insignificantly, where even today manual labor prevails, these processes take place slowly. Industrialization and modernization of production are much more complicated on them. Labor productivity and the profitability of production increase relatively slowly here. "With manual production, large institutions," wrote V. I. Lenin, "do not have a decisive advantage over small ones"*

Unfortunately, the question of the socio-economic structure of agriculture and its development in various stages of the construction of socialism has not been fully elucidated. First of all, the problem consists in determining the place of the LPKh in this structure and the influence of industrialization of agricultural production on it at the present time and in the future.

In our opinion, many writers give a one-sided interpretation to the position and role of the LPKh as a form of small production and, the main thing, its future: large-scale production is undoubtedly more progressive than small-scale production which in the end will die out. Modern small-scale production is regarded as an outdated, transient phenomenon, which has a negative effect not only on agricultural production and on the provision of its products for the society, but also on the social situation and, which is especially important, the behavior of the most varied social segments of society. The LPKh, being a specific form of small farm, is an especially sensitive area of agricultural production which reacts quickly to everything that influences production, and increasingly quickly to unfavorable factors.

The new phenomena in the development of the LPKh point to the fact that it is an organic part of socialist agriculture. In the latter, as in all other branches of the national economy, it is necessary to have production units of various sizes: large, medium and small. In this sense the LPKh as a form of small production still has a place. It is important not to compare small, individual production to large, public production, but to contribute to the achievement of greater interaction between the two types of farms. This means that there is a need to develop a long-range concept of small-scale production under socialism, a strategic course with respect to it, a scientific theory of its development and a search for new forms of organization of small-scale production that are adequate to the modern stage of the development of productive forces.

A scientifically substantiated strategy for the development of small-scale production will also contribute to a correct relationship to its modern forms and the development of a system for its organization whereby the LPKh could

*Lenin, V. I. "Poln sobr. soch.," [Collected Works], Vol 4, p 384.

find its place in the process of interfarm and agro-industrial cooperation and integration on the basis of a mutually advantageous partnership, and it could receive additional stimuli for development through participation in it.

Without cooperation with public production, the LPKh usually operates in traditional forms and at a low technological level which, as a rule, does not provide for additional income. The need to coordinate the LPKh with the public economy of the cooperatives and state farms is explained by many factors. Let us point out, in particular, the factor that the deepening division of labor between individual and public production contributes to the development of large-scale and specialized production. This is confirmed by practice. Production on large farms can only be specialized (and this is one of the conditions for increasing the efficiency of production) when these farms have an essentially limited branch structure. At the same time there is still a need both on the scale of the entire national economy and on the regional and local levels for a broad selection of various products of crop growing and animal husbandry. Thus specialization in agriculture, which is deepening during the process of interfarm and agro-industrial cooperation and integration, inevitably creates gaps in the assortment of products. To fill these gaps, along with efficient specialization of large public farms, is the historical function of the LPKh in the modern stage. Performing this function makes it possible to deepen the specialization of large socialist farms and provide for a rapid rate of their development. At the present time many products have to take a back seat in large-scale public production because they are very labor-intensive and capital-intensive. Large-scale production requires concentration of immense capital investments, which cannot be provided when they are dispersed among many branches and facilities. At the same time the LPKh has unutilized production reserves which can be utilized with relatively small capital investments. State support of the LPKh is to a certain degree a money- and capital-saving policy and becomes important under the conditions of industrialization of agriculture which requires immense capital investments in the public sector of production.

Cooperation between large public farms and small subsidiary farms and the development of horizontal integration among them also create additional possibilities for vertical integration among agricultural enterprises, enterprises of the processing industry and enterprises that trade in food products.

Under the conditions of the dynamic development of industrial methods of production at large agricultural enterprises, the forms and production technology on LPKh's cannot remain the same. The process of industrialization of agriculture not only leads to new forms of organization of large public farms, but also works in opposition to the LPKh. On the one hand, with the economic strengthening of public farms and with the radical change in the way of life of the peasantry, the number of LPKh's decreases (mainly as a result of youth); on the other hand, in the modern stage of industrialization of agriculture the role of the LPKh in the process of public production is increasing. This contradiction can be resolved only through intensification of production on the LPKh. One cannot assume that youth will not be employed on the LPKh's. The reference to today's practice is hardly convincing. Modern,

mechanized small-scale production, which is based on close production ties with the public economy and relies on the increasing moral, political and material support from the society, cannot be equated with the traditional routine production on the LPKh. With well-thought-out practice and a stable benevolent policy based on substantiated predictions of the development of the LPKh, the attitude of youth toward it can change and it can become the bearer of technical progress not only in large-scale, but also in small-scale production.

On the LPKh's of a number of CEMA countries in recent years there have been favorable changes both from the economic and technological and from the social standpoints. An increasing proportion of products from these farms enter commodity circulation mainly through a system of organized procurements. LPKh production is beginning to be modernized and specialized: the number of farms with random production is decreasing and the number of those which produce a limited number of kinds of products intended for sale is increasing. Almost in and of itself this leads to the application of production methods on LPKh's (or only individual elements of them) which have been tested in public production. The problem of providing LPKh's with feeds, utilizing modern industrial means and technologies on them, and guaranteeing the sales of their products is being dealt with universally. Regular specialized and semi-specialized production presupposes also good organization of the market and sales of the products that are produced within the framework of the public economy. Under the conditions of an effective system of stimulation, this is advantageous not only for the owners of LPKh's, but also for large agricultural enterprises and the national economy as a whole. The level of planning of the sales of LPKh products is rising, and collective control over them is strengthening to a certain degree.

At the present time one of the arguments against the need to develop the LPKh is the possibility of their obtaining excessively high incomes. There is no doubt that such incomes exist and, moreover, there are areas of production which, as a result of a significant difference between supply and demand, can produce regularly high incomes that are not in proportion to the labor that is expended. But one cannot but take into account that these and other undesirable elements related to the functioning of the LPKh are conditioned not by its essence, but by the inadequate level of development of agricultural production, including on the LPKh, because of factors of an organizational nature. Progressive changes in the organization of private subsidiary farms, if they are stimulated, will contribute to solving economic and social problems that exist here under present conditions. As for excessive incomes of the population from LPKH's that are obtained through the market, they will disappear as agricultural production increases and conditions are formed whereby the owners of private farms will have no incentive to sell their products in small batches on the market; when the time of their productive labor in the public and private economy will receive greater pay than the time spent in market sales; and when a real possibility is created for the sale of all products locally through the system of procurements.

Naturally, the intensive path of development of small-scale production and the spread of qualitatively new forms of its organization can be accompanied by a

temporary revival of certain negative tendencies, but if the society constantly deals with the organization and development of production on LPKh's and stimulates cooperation between them and the public economy, the influence of these tendencies will not last as long and will be weaker than they are with isolated development of LPKh's.

The strengthening of public farms and the level of their development that has been achieved raise the question of integrating individual production with them when the general economic conditions for this are ripe. In this case integration means forms of supply for production on the LPKh's and the sales of their products within the framework of economic ties, with whose help it is possible to significantly augment elements of economic activity that are inadequate or backward on LPKh's. Integration in this sense means not abolishing one of the socio-economic forms of production, but stable economic cooperation which is expediently organized and can be planned through the system of various forms of trade and monetary relations that augment one another and sometimes also through close reproduction ties. The integration of the LPKh with the public economy makes it possible to solve new production and social problems in agricultural production and contributes to strengthening socialist relations in agriculture since the path from its individual production to complete collectivization passes through modern, developing socialist relations.

One of the peculiarities of traditional production on the LPKh is the difficulty of planning it. In order to create conditions for cooperation between the public economy and the LPKh, one must plan for the former (the integrator), the production and sales of products created on the LPKh. Practice shows that the public economy can provide conditions for planned development of production on the LPKh. In Hungary, for example, the basis of all forms of cooperation between cooperatives and small producers is the family plan, which determines the needs of the LPKh for feeds, the purchase of necessary means of production, consultations with specialists, and so forth, and also reveals the realized possibilities and reserves of the labor force. On the basis of family plans an overall consolidated plan is prepared for farmstead plots as an organic part of the production plan of the cooperative, and various forms of procurements and services are substantiated both from the financial and from the technical standpoint. The family plan is prepared in such a way that by means of consultation with specialists the needs and possibilities the needs of the cooperative and the LPKh are coordinated.

The community of interests and the division of labor between the public economy and the LPKh at the present time require stronger reproduction ties between them. In developing these ties there is a certain sequence of steps, and the development proceeds from forms of less close and intensive cooperation to more developed forms of cooperation and integration.

The task of the integrator is to establish the quantity and quality and determine the proportions of existing elements of production, in the final analysis--the forms and limits of division of labor between the farms of the population and the large-scale public farm. This depends to a considerable degree on the production area of the state farms and cooperatives and on their economic potential. In economically weak agricultural enterprises with

relatively developed LPKh's public production takes on the responsibility of providing for a minimum of production elements and, conversely, economically strong public farms provide the LPKh's with maximum conditions for development. The distribution of production elements will serve as a basis for the formation of a system of material incentives that is acceptable for both sides. Integration is a mutual adaptation to one another's production peculiarities. Therefore the rights and responsibilities of the cooperating parties are registered in an agreement.

Although the integration of the LPKh's and the public farms has already become essentially necessary, various factors that impede the development of integration relations continue to have their effect. This is determined, in the first place, by the fact that the LPKh requires withdrawing part of the transportation and other means of production, which are limited in any case; in the second place, the work of the managers is complicated and the number of administrative workers increases (at the present time in Hungarian agricultural enterprises more than 3,000 highly skilled workers are working especially with LPKh's); and in the third place, there is greater differentiation of the members of cooperatives and workers of state farms in terms of incomes.

In spite of the existence of these problems, the process of cooperation and integration of public production and the LPKh should develop, deepen and improve. The system of various increments and other forms of material assistance stimulate the development of the LPKh in a direction that is necessary for the national economy. The CEMA countries are stepping up their search for forms which will make it possible to effectively resolve management, economic and political problems of agriculture and the production of food products on a macro- and micro-level, taking into account the existence of the LPKh and the need to retain it with structural, organizational and other changes in it that are expedient from a national economic standpoint.

In a number of countries in the area of cooperation between individual and public farms in recent years there have been many of these new phenomena and organizational forms of cooperation which would contribute to the development of the LPKh if they were more widespread.

Hungary's experience is especially interesting. Among the organizational forms of integration of the LPKh with public production in Hungary, where this process has been most developed, one can single out the following main types.

The first type is the organization of an independent division of farmsteads. With this organization the division of the LPKh is included among other divisions of public management as an independent subdivision with intrafarm accounting, management and material and technical supply. The LPKh division handles all activity in the sphere of production of one product or another, for example, vegetables. It can have the most varied kinds of property relations.

The second type is typical of specialized farms that have a small number of branches (divisions) that utilize LPKh's to increase the production volume. With this type the farms do not form independent (autonomous) LPKh divisions, but the management and organization of the existing branches (for example, the production of broilers and turkeys and fattening hogs) extend also to the products that are produced on LPKh's. Here the production can be based on the fact that small commodity producers offer only labor force and production premises for the livestock, and the remaining elements of production are provided by the public farm. Under the conditions of this kind of organization the LPKh becomes an organic part of the latter. The labor contract usually establishes the following conditions: the small producer receives animals that are the property of the cooperative, uses the labor force, uses feeds obtained from the cooperative and sells his products through the cooperative. The policy for conducting labor operations is implemented according to a prescribed technological program. For the work that is performed the owner of the LPKh receives earnings depending on the production results he has achieved, and for the utilization of his buildings and structures he receives income. This method of organizing production on the LPKh is based on precise technology described by the cooperative, which makes it possible to apply and rapidly disseminate the most modern production methods.

At the present time vertical integration of the farms is being developed, an example of which is the organization of the production of goose liver in Hungary. This is done within the framework of cooperation between the LPKh, the public farm of the cooperative and the poultry raising combine. The cooperative propagates the geese, the LPKh fattens them (with feeds from the cooperative), and the combine receives the fattened geese and organizes their slaughter, and the labor of the owners of the LPKh's is paid for after the products are released, taking into account their quality. Such a system is also being extended to hog raising. It is obvious that these processes signify the inclusion of the LPKh in interfarm and agro-industrial cooperation and integration.

The organization of "fully integrated farms" is accompanied by increased requirements on the part of both public farms and LPKh's. At the present time the conditions for production and labor are being updated in an accelerated way and more modern technologies and production methods are being applied. In particular, the increased proportion of purebred and highly productive cattle and poultry is evidence of the modernization of the LPKh's in Hungary. In the 1970's hundreds of thousands of LPKh owners provided themselves with modern equipment and technical means. They increased the application of mineral fertilizers, chemical means of plant protection, plastic coverings for hothouses, small tractors, sprinklers, equipment for cage maintenance of rabbits and poultry, equipment for mechanized milking, and so forth. Thus the traditional means and methods of production on small farms are being crowded out by modern ones.

Under modern conditions it is becoming increasingly crucial to develop long-range programs for the modernization of individual production. In Hungary at the present time experimental demonstration farms serve the cause of this modernization. Here the cooperators experimentally test new economic methods of production on LPKh's and publicize them among producers.

The public integrator farm and the LPKh are establishing an acceptable form of cooperation in keeping with the specific local conditions. The main requirement for any type of cooperation between the public farm and the LPKh involves contributing to the fulfillment of production tasks for increasing agricultural production, raising the level of collectivization of production and labor, and developing socialist attitudes in agriculture. Successful introduction of progressive forms of cooperation between the public farm and the LPKh and their integration in Hungary, despite the fact that these forms are still in the process of further development and improvement, are receiving increased attention in other countries as well so that this experience can be utilized to increase agricultural production.

Thus in the modern stage of industrialization of agricultural production, specialization and concentration in agriculture, the development of interfarm and agro-industrial cooperation and integration in socialist countries, the process of including LPKh's in these forms has still not been significantly widespread. Higher forms of cooperation between public and private subsidiary farms in the CEMA countries are still in the initial stage of introduction. Public division of labor among these farms is still not adequately developed. It is still not clear what at the present time and in the near future can be expediently produced only in large enterprises of the public sector, what can be produced on small individual farms and what can be produced in both sectors at the same time.

There are still many unsolved problems in the development of LPKh's, their mechanization and the introduction of modern technological methods.

Nonetheless, the national economic significance of cooperation between public farms and LPKh's is increasing. Existing practice makes it possible to draw the conclusion that in the process of enlisting LPKh's into the sphere of interfarm and agro-industrial cooperation and integration one can successfully utilize the reserves of these farms for further developing socialist agriculture and raising the level of satisfaction of the needs of the population for food products and of industry for agricultural raw material.

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